



#4. Factors That Contribute to Student Achievement in an Introductory Animal Science Course

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The objective of this time series study was to determine if selected factors could predict student final grade percentages in the Introduction to Animal Science course. The selected factors included student pretest scores, prior involvement in 4-H, FFA and Agricultural Education classes, perception of their own knowledge of Animal Science, home town population, and the number of missed quizzes and missed labs. Students enrolled in Introduction to Animal Science 1004 from fall 1991 to spring 2007 ($n = 813$) were administered a pretest that also collected demographic data. Did pretest scores combined with missed quizzes and missed labs contribute ($r = 0.58$) to student performance on final grade percentages? Previous enrollment in 4-H, FFA and Agricultural Education courses had minimal effect on final grade percentages, but were found to have the highest correlation with pretest scores. A student's perception of knowledge also impacted pretest scores but had little effect on final grade percentages. Implications of this study are that students who regularly and consistently attend class will report better performance than those who do not. Students who perceive their knowledge of Animal Science as "average" or "above average" will likely do better on the pretest. Students who scored higher on the pretest, on average, tend to maintain an advantage throughout the course. This study allowed us to identify "at risk" students and provide the opportunity to increase their chance of success in the course. Early detection of students who are having difficulty leads to intervention and greater retention in the program.

#5. Teaching Forage Courses with the Aid of Interactive Computer Modules

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Educational research strives to link students' learning styles with instructional methodology. Traditional lecture format can disseminate information or create interest in a topic, but may not be effective in stimulating critical thinking or analysis of material. Courses that combine directed classroom interaction with computerized, interactive activity (hybrid courses) have potential to benefit students by allowing them to pace their learning while retaining contact with an instructor who can mentor their progress. Interactive, computerized instruction gives students control over the amount and rate of material assimilated; these students out performed those in a traditional classroom environment. Our objective was to create a suite of interactive modules that will allow students to learn from the "best" instructors from across North America. Faculty from six land-grant universities collaborated in a single effort and created 11 interactive, computer-based teaching modules. Each module requires about one hour for students to complete. The modules have been modified based on student evaluations and have been provided to instructors of Forage Courses at over 100 institutions. The modules demonstrate how multi-institutional collaboration in the creation of teaching modules improves the quality of teaching within individual institutions. Use of the teaching-module technique can be applied to all academic disciplines to enhance food and agricultural sciences education. This project serves as a prototypical model for module development and creation. In addition, the methodology "bottlenecks" and "pitfalls" learned from this project will make subsequent projects or teams more efficient in module development and the modules more effective teaching tools.

#12. Using a Wiki to Enhance Resource-Based Learning and Information Literacy Skills

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In the fall semester of 2007 a wiki was introduced into a class entitled "Computer Applications for Landscape Contracting." Previously, the class followed a lecture format with associated problem-solving exercises and assignments. Due to a lack of student engagement, the instructor decided to use the principles of resource-based learning and technology-enhanced learning, supported by a wiki, in an attempt to increase student engagement and shift the learning responsibility from the teacher to the students. Students worked in teams from four to eight to construct group knowledge for different relevant class technologies. Students were required to answer seven questions about their particular technology and then teach other students the important aspects of the technology. By forcing the students to find their own resources, use them to create group knowledge, and publish the knowledge through a wiki, class participation increased dramatically and students were able to answer many of their own questions. One important outcome for the course was enhancing the students' abilities to learn how to learn new technologies rather than learning aspects of one technology or another as demonstrated by the instructor. Another unexpected but important outcome was the introduction to working in mixed teams with some teammates working in face-to-face relationships and others in virtual relationships mediated by the technology. The wiki was made publicly available and published at <http://landscape.psu.edu/hort120>. Each year the students of the course will add to the existing content to create and maintain a resource for the academy and landscape contracting industry.

#13. Curriculum Development and Delivery Leading to Measurable Outcomes and Impacts

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Montana State University's (MSU) on-line Master of Science in Science Education (MSSE) degree program collaborated with Utah State (USU), Colorado State (CSU), and Wyoming (WY) in transforming "Stream Side Science: Lesson Plans and Water Related Activities for Utah 9th Grade Earth Systems Science," a USU instructional manual in water quality monitoring, into a seven-week, three-graduate credit, on-line experiential field course for secondary science teachers. The course

was titled "Stream Side Science" (SSS), patterned after the USU instructional manual. USDA-CSREES partners from USU, CSU, WY provided evaluative input during SSS development and critiqued general course content, to ensure integrity of content while keeping curriculum focused on the field-based aspects of watershed science. SSS on-line provided instruction and materials to students to independently and actively participate in a hands-on, field-based (stream side) course focused on real-time water quality monitoring and enhanced knowledge of water quality principles. During trial offerings, a diverse group of evaluators, including students enrolled in the course, assessed successes and limitations of the course. Components of the course rated as successful or beneficial included: 1) level of science-based content; 2) diversity of teaching resources introduced; and 3) inclusion of science teaching standards to guide teachers on content appropriate for the secondary classrooms. In addition 54% of students reported good to exceptional enhancement in confidence level to teach water resource science after taking the course. Limitations of the course were also reported and summarized. The course was accordingly modified. Past SSS students were surveyed to identify impacts. Significant impacts included:

81% of respondents incorporated knowledge, skills or activities from SSS into their classrooms; SSS content brought into the classrooms included chemical and physical parameters (69%), stream monitoring (38%), and macroinvertebrate counts (31%).

A conservative estimate of over 400 students impacted by SSS within a two year period.

Half of the respondents indicated their teaching methods had changed as a result of SSS, including incorporation of more hands-on lab activities in the classroom.

75% of respondents indicated having used SSS content or principles outside of the school setting; settings include: family activities (62%), community events (31%), and teaching conferences (23%).

This presentation will include a brief overview of course format, content, and delivery methods, evaluation tools and techniques used during course development and modification, and student-reported outcomes and impacts following two offerings of the course.

#14. Differentiated Curriculum in a Multi-Media Format: Feeding Young Children in Group Settings

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Adult attitudes and competencies about nutrition and the adult-child feeding relationship impact children's eating, their food choices, and their mealtime lifestyles. Adult learners vary greatly in their personal eating and feeding history, culturally

shaped habits, and education levels. This USDA Higher Education Challenge Grant Project is aimed at creating innovative curriculum for teaching adults about feeding children in group settings. Materials and activities for the instruction are based on a system of differentiated instruction where options for learning include leveled activities and resources. This project offers an innovative, hybrid multi-media distance education curriculum where trainers and faculty can access all or parts of the differentiated curriculum for workshops and courses. The learner-centered design offers lessons, handouts, assessments, activities, bibliographies, and media materials where differentiation of all materials is pervasive. Activities in the curriculum include options for the learner to choose assignments ranging from hands-on practical activities to research and theoretical analyses and synthesis papers. Novice, intermediate, and advanced learners can find their starting points for learning in the multiple assignment options. Web technology allows for resources that are simple to highly complex. Because child development faculty and nutrition faculty joined to offer the instruction, learners benefit from integration of science about what children need for healthy eating and developmental characteristics of children and how these work together in developing healthy lifestyles. All course materials and lessons are available to trainers and faculty for no cost via the world-wide web.

#15. Developing Agricultural Faculty to Teach Leadership

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Developing agricultural faculty in the area of leadership education has far reaching implications throughout agricultural colleges and the industry impacted by those colleges. The Leadership Education Institute (LEI), a project funded by a USDA Higher Education Challenge Grant, brought together agricultural educators interested in teaching leadership and provided them with a sustainable network for learning about leadership education, best practices and research in leadership education, and opportunities for continuous development in agricultural leadership education. The project objectives were: (1) to provide professional development to faculty in colleges of agriculture responsible for delivering undergraduate leadership curriculum; (2) to support faculty in aligning leadership instruction and curriculum with current research and best practices in leadership education; (3) to develop a

sustainable network of faculty in colleges of agriculture teaching leadership coursework; and (4) to disseminate contemporary models for leadership instruction and curriculum to colleges of agriculture. Ten faculty representing colleges of agriculture across the nation were selected to participate in the institute. LEI Fellows participated in three face-to-face multi-day workshops in addition to campus visits to host institutions. Workshops were designed to provide opportunities for the participants to work with experts in leadership education from other universities and colleges. Two of the workshops were offered as extended pre-sessions to the Association of Leadership Educators national meeting and a third workshop was organized as a fall retreat for LEI participants. Project outcomes included the development of new leadership courses, modifying existing curriculum, and proposing new programs in leadership in colleges of agriculture.

#17. Implementing Agricultural Literacy into the Elementary Classroom

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This study measures the effectiveness of an agricultural literacy professional development program that was provided to K-6 grade teachers throughout the state of Utah. The course provided in-person and asynchronous online training on how to incorporate agricultural lessons and activities into their science, social studies, and health classes. The effectiveness of the program is determined by the extent that the participants have continued to use the lessons and activities following the professional development experience. Participants were selected from a three year period of enrollment. One hundred and seventy two elementary school teachers were solicited to take an online survey to determine the extent that they have implemented and continued to use the lessons and activities from the professional development program. Sixty five (37.8%) of the participants responded to the survey. Participant responses were statistically analyzed and given a weighted score called a Sustained Implementation Scale (SIS). As a means to compare participants' use across years, the number of lessons used one year after the course is weighted by one, the number of lessons used in year 2 is weighted by two, and the number of lessons used in year three is weighted by three. Mean SIS scores in Year 1 ranged from 11.92 to 17.30, in Year 2 the mean scores were 20.00 and 20.83, and in Year 3 the mean score was 25.57. This professional development program can be considered effective as measured by the frequency of continued use of materials and lessons in participants' classrooms following the program.

#18. Environmental Education Technique for Demonstrating Ozone Pollution Effects on Vegetation

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Sabrina Chrzanowski**

Ozone pollution is a major worldwide environmental issue, which affects economics, human health, and environmental health. The annual economic loss due to ozone pollution effects on vegetation in the United States is \$1-2 billion and even greater in other countries around the world. Health problems associated with ozone pollution include coughing, congestion, chest pain, and throat irritation, and the worsening of respiratory diseases such as asthma, bronchitis, and emphysema. Ozone induced vegetation injuries include, stipple, chlorotic mottle, tipburn, premature defoliation, and reduced crop yields. During the 2007 Pennsylvania ozone season (April-October), a series of photographs, weather and air pollution data were collected at the Air Quality Learning and Demonstration Center located at the Pennsylvania State University Arboretum. This data was then used in the development of a teaching module meant to educate individuals on the topic of ground level ozone pollution effects on vegetation. To test its effectiveness, the module was presented to a group of Penn State Agricultural and Extension Education student teachers. Prior to the presentation the participants took a pre-quiz to test their knowledge on the subject. They were then presented with the module, which includes two power point presentations, a homework assignment, an in class activity, a module overview and a quiz. This presentation was followed by a post-quiz used to retest the participants' knowledge of the subject. A paired t-test was used for statistical analysis, which demonstrated that there was an increase between the pre and post quiz means ($p=0.000$, mean pre-quiz=6.63, mean post-quiz=13.06, $n=16$).

#20. Associations between Learner Interaction Patterns and Performance in a WebCT Course

Greg Miller

Iowa State University

Course management systems like WebCT automatically collect data on the extent to which students interact with course materials, with other students, and with the instructor. Can this information be used to determine whether student interaction patterns are associated with academic achievement in an online course? The purpose of this study was to conduct an exploratory analysis of student interaction patterns in an online graduate-level research methods course. Data were limited to those which were automatically collected by WebCT during course delivery. Nineteen students were enrolled.

Student majors included agricultural education ($n=10$), professional agriculture ($n=7$), sociology and entomology ($n=1$), and undeclared ($n=1$). Learner-content, learner-instructor, and learner-learner interaction all influenced grades in this online graduate level research methods course. Persons ($n=10$) who earned a grade of A or A- interacted more frequently in all areas. Specific interactions that most strongly influenced grades included visiting content pages, reading discussion posts, and regularly checking e-mail messages. In addition, students who monitored the course calendar and checked their grades more frequently were more likely to earn an A or A-. It was recommended that the instructor of this course utilize the findings and conclusions to communicate to students the associations between interaction and academic achievement. Students who desire to improve their performance might be motivated to interact more frequently when informed of how their level of interaction in the course compares to that of students who earned As or A-s.

#23. Who's the Best? Assessing Cognitive Level of Instruction: The Case of Razi University

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Agriculture professors are charged with providing high quality education. They are also expected to teach students at higher level of cognition since higher order thinking tend to increase academic skills. The purpose of this study was to award instructors who taught at higher order thinking in College of Agriculture at Razi University. All 36 instructors in College of Agriculture were selected. Florida Taxonomy of Cognitive Behavior (FTCB) was back translated and used to assess the cognitive level of classroom discourse (the formal speech and or conversation delivered during class). Researchers observed and recorded instructors' teaching three times during the semester. Cognitive level of instruction was assessed to be: knowledge = 40%, comprehension = 28%, application = 5%, analysis = 14%, synthesis = 11%, and evaluation = 2%. Although classroom discourse was presented predominately at lower cognitive lower, those taught above knowledge level were awarded. Workshops should be designed to assist instructors in learning techniques for increasing the frequency of opportunities given to students to think at higher cognitive levels, thereby enhancing the cognitive processing skills of students.

#24. Enhancing Programs Designed to Increase Student Retention

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Many colleges of agriculture report increased academic standards for matriculation. Academic failure still occurs among students accepted into these programs, although their academic credentials predict college success. The causes of these academic difficulties are complex, and single approaches to assist these students have been unsuccessful. An academic counseling program was established at the University of Georgia to provide individualized assessment of the causes of academic difficulty and to construct specific programs for each student to remedy their academic problems. In initial studies it was found that student participation in the counseling program significantly improved grade point averages and the opportunity to remain in college. Differences in the success rate of students participating in the program led to further evaluation of underlying causes. Students on academic probation perceived that barriers to academic and career goals were higher, and career decision self-efficacy was lower, than for students not on probation. The ability of the students on probation to cope with these barriers was also lower. There were no gender differences on career decision self-efficacy, perception of barriers, or perception of coping skills. Non-Caucasian students perceived more barriers to career and academic goals. As counseling programs for student retention interact with students, attention to career decision self-efficacy, perception of barriers, and perception of coping efficacy may enhance overall success of retention.

#25. Integrating Multimedia into Ag Education Instruction

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Alabama A&M University, one of the largest HBCU schools, is providing a valuable opportunity for the agricultural education students and general education students to engage in a computer-based Multimedia Talent Initiative to tap their multimedia talents. Students are provided with the computer-based learning tasks and activities, such as graphics design, animation, sound production and video production associated with content areas. The major strategies used in the learning process are composed of modeling, resource-based learning, discussing, cooperative learning, teamwork, and group evaluation. Students claim that the computer-based multimedia production is interesting and enjoyable to learn, because it relates to their future life as

teachers. The learning activities have stimulated their learning interests and motivation. In this program, the students not only gain knowledge and skills in multimedia design, but also enhance their learning creativity and their attitude toward the use of the multimedia technology. Through the cross-visit of each other's project portfolio, students are proud to see their visible progress, and are aware that it is fruitful to share each other's experiences and techniques. Several of their projects were chosen for the nationwide Adobe College Student Multimedia Competitions.

Student Carlos Stephenson and Jason Langford won the First Place and the Fourth place in the Adobe National College Student Flash Competition II in 2007. This tremendously increased the students' self-image and confidence for success. The information of Adobe College Student Media Competition 2007 could be found at <http://www.studica.com/skills/competition.cfm?competitionID=70>.

#26. Faculty-Coached Student Panel Collaborations: Partnerships for Teaching and Learning

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The goal is to develop models of faculty-student partnerships that result in effective peer-teaching opportunities for the student partners. This model explored the development of faculty-coached, student-led panels aimed at enhancing the interest of peer undergraduate students in pursuing international learning experiences. A class was developed to debrief undergraduates who had participated in student-centered learning abroad programs during the previous year. Course activities capitalized on knowledge gained by the undergraduates during their international programs. The course involved successive developmental activities that fostered the faculty-student partnerships. Instructors began by guiding students through reflective exercises that promoted self-examination of international perspectives and the personal impact of study abroad. These exercises allowed instructors to gain insights and understanding about how students perceived their study abroad experiences. Students were coached to gradually assume the role of teacher and accept leadership for educating their fellow students about international learning opportunities. This role reversal allowed students to take on the challenges of teaching. The course culminated in the student-led panels presenting information and personal experiences on study abroad to other undergraduate classes. Survey data from audiences of these classes indicated three primary outcomes: 1) student audiences enjoyed listening to their peers discuss study abroad experiences; 2) student audiences indicated that they learned new and interesting information from listening to the student panel

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presentations; and 3) student audiences reported positive impacts on their interest in study abroad. Faculty-student partnerships, in the form of student-led panels, can result in effective peer-teaching by the student partners.

#27. Global Pursuits: Student Reflections on Short-term Learning Abroad Experiences

Walter Hurley, Darrel Kelser, and Judith Sunderman

University of Illinois

This research was undertaken to develop a better understanding of how students think about their study abroad experiences. What meaning do students attribute to their international experiences? How can the benefits of international study be more effectively incorporated into the classroom? Global interdependence has created new circumstances requiring educational opportunities that cultivate lasting skill sets applicable to international environments and the ability to appreciate other cultural perspectives. Institutional programming designed to instill international competencies in undergraduates needs to be based on a clear understanding of the nature, durability, and process through which international experiences are integrated into the academic and personal lives of students. To address these questions, an experimental course was developed to gather qualitative data in the form of reflections from students who had participated in learning abroad programs during the previous year. Results of the analysis validated previous research on the four generally recognized categories of study abroad benefits: academic commitment, global perspective, personal development, and career focus. A further finding revealed patterns in the way that students thought about their international experiences and recognized the effects of their experiences. Four patterns in thinking about the personal impact of study abroad were observed: 1) confronting issues of identity and self-understanding; 2) recognizing new knowledge and insights about abilities and competencies; 3) sharing and using new knowledge; 4) integrating new knowledge and understanding into personal identity. These findings reveal the emergence of multicultural perspectives and illustrate the nature of student thinking arising from international experiences.

#30. Leader, Spoiler and Wannabe: Emerging Group Roles for Today's Online Groups

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The goal of this study was to explore the emergence of roles and processes in online group projects.

The primary research question was: How do students define their roles and responsibilities in online group projects. One hundred and twenty-six students in six Family and Consumer Sciences online courses (3 Freshman level and 3 Senior level) participated in online group projects as part of their course requirements. Transcripts of planning threads and chat logs were coded for emerging themes and issues. The artifacts were coded independently by all three researchers who then discussed the emerging data to create the collapsed codes. Four themes were identified: testing the waters, apologies as “being nice”, “tag – you’re it” and struggling to find one’s role. In contrast to typical roles defined in the literature, students created alternate roles as they went through the group project process. These roles included: (1) Leader – one who facilitates and keeps the group on task, (2) Wannabe – tries to control the group without taking responsibility, (3) Spoiler – very infrequent participant who tries to change the direction of the group then fades out again, (4) Agreeable Enabler – one who goes along with all suggestions even when tasks shift and continues to do the work, (5) Coat-tails – tries to act like a participant but does no work, (6) Supportive Worker – understands assignment criteria and the group dynamics, follows through, and takes initiative to ensure the groups success. In summary, results support the need for a balance between an approach that allows students to create and experience roles on their own and an approach in which faculty assign roles and direct the group process.

#31. Connect. Develop. Achieve. The Essence of NACTA

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Connect. Develop. Achieve. What do they have in common? According to qualitative research, they are the strengths of the North American Colleges and Teachers of Agriculture (NACTA) and keys to recruiting and retaining NACTA members. To assist in updating NACTA's image and brand, students in a public relations course at Kansas State University completed a semester-long project to research targeted NACTA member demographics and psychographics. After determining precisely the various segments of NACTA membership and educating themselves on the organization, students updated the brand image, provided suggestions for

brand awareness, and created new recruiting materials for the organization. Through the experience, students learned the importance of connecting research obtained both through primary and secondary methods to develop a focused and concise communications effort designed especially for NACTA. Using the research and communication materials will promote greater awareness and an improved image for NACTA.

#32. Enhancing Student Global Competency through Curriculum and Travel Study Programs

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There is a need to increase the international experiences of students studying agriculture at U.S. universities, but there are several barriers that exist such as financial costs and time constraints. There is strong literature support that students with fluency in a foreign language and critical thinking skills are more likely to be recruited by employers in today's ever expanding global marketplace. Universities must transition to meet this valuable need by developing opportunities for students to succeed in diverse cultural and international settings. The objective of this project is to identify and assess the attributes that impact the global competence of agriculture students and faculty. Students can gain valuable international competency through a combination of language immersion, internationally focused curriculum, directed research projects, and travel study opportunities. A pilot project of 11 students and faculty participated in a travel study program with a Mexican university partner in the spring of 2008. All participants were pre and post tested based on a series of 30 questions regarding their perceptions of international agriculture and cross cultural competency. Initial data results show increased international awareness of participants and desire to learn more about the host country. Students and faculty are able to share these experiences with others on campus and increase global awareness among the community. Faculty participants enhanced their international professional development and teaching effectiveness in the classroom. Student participants received increased global competency and a more complete understanding of how U.S. agriculture competes in a global market.

#36. Research in Veterinary Medicine – Does Experiential Learning Make a Difference?

Bert Stromberg and Mark Rutherford
University of Minnesota

Rapidly growing knowledge of the genomes of animals and pathogens has opened new horizons in veterinary medicine, agriculture and other

biotechnical areas. A new generation of scientists must be trained to harness the benefits of genomic information to strengthen animal agriculture in the United States. The College of Veterinary Medicine provides our students with strong systematic access to basic and translational research training. This experiential training enables students to address critical issues facing veterinary medicine in this era of increasing awareness of the importance of zoonotic disease and food safety. Our students work with faculty in their research laboratories during the summer. Students are competitively selected based on short research proposals they prepare based on the mentors area of research interest. Proposals are ranked and approved by a steering committee. In addition to the research project they are expected to participate in a weekly seminar program where topics include ethics of animal research, scientific writing, keeping a databook and alternative careers for veterinarians. Our program is currently recruiting the seventh class of Scholars. Of the 74 students who have participated over the past six years, three have been admitted to and/or completed the PhD degree, one student has completed the MS and several are in residency or internship programs. Seventeen are enrolled in the DVM program and five have completed the degree. Funding for this program has come from the USDA Challenge grant, grants from the Merck-Merial Scholars program and the College of Veterinary Medicine.

#40. Student Learning Outcomes: Applications for Workplace, Family, and Community Roles

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The Department of Family Studies, College of Agriculture, conducted an Alumni Survey of Bachelor's Degree recipients from 2001-2006 to provide scholarly assessment of students regarding curricula. The survey instrument was developed with input from the faculty, identifying 49 learning outcomes from course competencies in the areas of personal finance, lifespan development, intervention, and advocacy and policy. Graduates indicated responses based on whether they use the learning outcomes in their workplace, family, or community lives, or combinations of these roles. Three mailings were sent and as of this date, 93 of 371 graduates have responded (39 addresses were undeliverable). The majority of graduates were women (n=87), 59% were married, and 70% were 25-34 years of age. Eighty-four percent were Caucasian and 11% were African American. Seventy percent worked fulltime, 84% had one job and 24% were working in education. Responses varied across the 49 learning outcomes. Respondents most often attributed learning outcomes to family roles, followed by combined roles (work, family, and community). This was especially true for the personal finance and lifespan learning

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outcomes. Intervention learning outcomes were more specifically attributed to roles based on the type of intervention. Advocacy and policy learning outcomes were used mostly in the application of work roles. Learning outcomes were rarely attributed to community roles; this suggests more community-based internship placements are needed.

Evidence that graduates have used student learning outcomes in their workplace, family and/or community roles provides assessment data for curricula change for program quality enhancement.

#41. Sequence and Consequence: A Hands-on Approach to Bioinformatics Research for Undergraduates

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University of South Florida

Querying genomic databases has become as fundamental to biology as molecular techniques. Our collaboration has produced an undergraduate curriculum that enables students to understand how data becomes knowledge through the use of bioinformatics. The specific objectives of our project were to: 1) Familiarize students with the tools of bioinformatics through the exploration of databases, analysis of sequences, prediction of gene functions, and inference of phylogenetic relationships; 2) Provide students with an understanding of the process by which new knowledge is derived from sequence data by engaging students in the process of annotation and assembly of genomes; and 3) Encourage the development of critical thinking skills by providing students with open-ended questions that they must address with plausible hypotheses.

Over 2000 students at MU, UCLA and USF were involved in DNA sequencing and genome annotation of the bacterium *Ammonifex degensii*. Our project has enabled completion of the genome sequencing and annotation of the genome has begun. Through the annotation of pathways, students have been able to learn more about the physiology and ecology of this particular bacterium as well as other similar organisms. Students participating in these courses routinely report that doing real research is more motivational than textbook learning and gives them a new appreciation for what researchers do. This collaboration has resulted in a national pilot project involving genome annotation performed by undergraduates at all levels. At the conclusion of this project, the annotation platform as well as instructional tools will be available for other institutions to use.

#43. Mathematics and Science Curricula for Improved Agronomic Decisions

David Clay, Sharon Clay, and Gregg Carrlson
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Many natural resource managers have reduced the amount of time doing manual labor and increased the time devoted toward problem solving. This change in resource allocation is typical of the information age. However, because natural resource management is a tradition-dominated industry, other managers have only slowly adopted information age technologies. Looking back in history, the transition from horse power to tractor power was truly an inevitable and monumental change. The language of the information-age is that of mathematics and computers. Natural resource managers traditionally have been trained in the biological sciences with a focus on developing cognitive skills rather than mathematical skills. This project developed a manual entitled, "Mathematics and Science for Improved Agronomic Decisions." This manual provides: 1) a basic understanding of the scientific method; 2) information needed to conduct and analyze experiments, and 3) training on how to calculate values based on equations. The document has been assessed by scientists, trainers, and students.

#45. The Alliance for Cooperative Course Exchange in the Plant Sciences

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Janet Cole
Oklahoma State University

Richard Harkess
Mississippi State University

Jeff Kuehny
Louisiana State University

With reductions in resources available for teaching and the loss of faculty teaching positions, curricula in the plant agricultural sciences have come under significant pressure. Course offerings have been downsized which has resulted in a less thorough curriculum and has limited the ability of institutions to address emerging educational needs. The participating institutions received USDA-HEC funding to determine how the participating institutions might develop shared courses to address this problem. A series of meetings were conducted at which issues related to course sharing among the institutions was discussed. These meetings included faculty, administrators, registrars and specialists in distance education and academic alliances. Issues addressed in these sessions included course needs, delivery systems,

registration issues, tuition sharing and numerous other issues critical to the successful inter-institutional sharing of courses. As a result of these meetings the participating institutions developed the Alliance for Cooperative Course Exchange in the Plant Sciences (ACCEPtS). A series of operating documents, including bylaws, were developed and approved which will govern the operation of the ACCEPtS program. A Board of Directors will administer the ACCEPtS program and the Institute for Academic Alliances at Kansas State University will be contracted to handle the mechanics related to registration, tuition billing and reporting among the institutions. The participating institutions will use 20% of the tuition collected from ACCEPtS courses for operations and future course upgrades and for the development of shared courses. Additional institutions will be allowed to join the ACCEPtS program.

#47. Integrating Environmental Education in the Curriculum

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We have undertaken a comprehensive plan to integrate environmental education (EE) by using two approaches institutionalizing EE at KSU by incorporating environmental topics in the curriculum through faculty mini-grants and forming a collaborative partnership with local middle and high schools to assist them in implementing an environmental education program in the schools. The primary goal of the faculty mini-grants program is to improve environmental literacy for all KSU graduates, especially those who plan to become teachers. These mini-grants are designed as part of our efforts to institutionalize environmental education at KSU by creating or supporting coursework that provides in-depth, cross-disciplinary instruction that is ecologically sound and promotes responsible civic actions toward the environment. The program provides support for either development of new courses or enhancing existing courses by incorporating environmental issues or topics. We have also established an EE Center on a 300 acre nature preserve that serves as an outdoor classroom for these activities. Last summer, we developed a stream ecology program and offered it to Kentucky school teachers. Forty two teachers participated in the week-long summer workshop. We focused on stream ecology principles, human impacts, field methods, macroinvertebrate identification, data analysis, and Shannon Diversity. In order to ensure adoption into classroom curriculum, we are conducting follow-up workshops and providing the necessary equipment and support to the participating schools. We will present dissemination methods, lessons learned from our summer workshop, services that will benefit teachers and curriculum adoption, and the results of the fall 2007 follow-up workshop.

#48. Communicating to the Consumer through a Student Writing Project in an Introductory Animal Science Class

Frank Robinson, Dana Penrice, Arran Lamont, and Steve Koeckhoven
University of Alberta, Edmonton

Rarely do university students get the chance to communicate what they learn in class to the larger community outside of the university. In the Animal Science 200 (Principles of Animal Agriculture), students follow-up their major project with a news article that highlights an issue in animal agriculture. The objective of this project is to make students aware of consumer perceptions of agricultural issues as well as give them the opportunity to develop written communication skills that will last them a lifetime. Groups of two to four students answer a question related to animal agriculture and present ten science points about the subject. After presenting the answer through oral communication in a public forum, the group presents it through written communication in a news article format. While previously in this class, students wrote papers that were read solely by the professor and TAs, these student-written articles are published now for the general public. Each month, a student article is published in two major city newspapers, the Edmonton Journal and the Calgary Herald. Articles are also published in two magazines: "Food for Thought" and "Small Farm." Students writing as a team gain skills in dealing with group dynamics. They must also learn to write at the level of their audience and convey their message in a short and concise manner. Students also get the satisfaction from seeing their articles reach food consumers. A full project description, objectives for the project, and student testimonials will be presented.

#52. Incorporating Information Literacy into an Introductory Plant Science Course

Kathleen Williams, Teresa Cerny-Koenig, Caroline Pearson-Mims, Stephen Borrelli, Corey Johnson, and Cathy Perillo
Washington State University

Assessment of student performance in 2006 and 2007 revealed that information literacy (IL) was a weakness in the Horticulture, Crops, and Soils programs. Therefore, to help our students develop IL skills, instructors in the introductory Hort/Crops 102 course collaborated with the WSU Libraries' Information Literacy Education Project to incorporate an additional component into an existing plant science assignment that directly addressed standard IL elements. The class was composed of students from the freshman to senior levels. The specific objectives are to: 1) describe the incorporation of an online IL tutorial in a plant science class, 2) evaluate

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its effectiveness for improving students' understanding and application of IL, and 3) improve the students' abilities to find and use information. The website featured a series of tutorials covering the IL standards: Needed information, Accessing information, Evaluating information, and Using information, followed by a quiz and assignment specific assessments (ASA) for each standard. The ASAs and a final comprehensive crop report tested the students' abilities to apply the information from the tutorials. The class average on the pretest, taken before the online tutorials, was a 59%. The average quiz score after completing the tutorials was 89%. Scores on the final crop report (88%) were correlated with both the online quizzes and the ASAs. There were no significant differences in averages on the pretest, quizzes, ASA or final crop report among class levels. Preliminary data suggest that the website learning tool shows promise for improving undergraduate students' understanding and application of IL.

#54. Enabling Graduate Learning in Risk Analysis

Lulu Rodriguez, Alicia Carriquiry, Ana Paula Correia, Scott Hurd, Helen Jensen, Annette O'Connor, and Jeff Wolt
Iowa State University

Iowa State University has undertaken the development of integrated curricula to enable graduate learning in science-based risk analysis and decision-making pertaining to food, agriculture, and veterinary medicine. Our longer-term goal is to develop and adapt curricula and related materials leading to the establishment of a graduate certificate and a graduate minor in Risk Analysis and Decision-Making (RA&DM). Risk analysis offerings within multidisciplinary certificate and minor programs will equip students to meet challenges in domestic or international food and agricultural markets and to deal with public concerns regarding food safety and security. The courses will train students to effectively deal with risk from a science-based perspective and will better prepare students who pursue research and non-research careers in education, industry, government, or non-government organizations to deal with the interface of science and policy. An initial offering in quantitative risk assessment has now been taught three times to combined sections of on-campus and distance learners. Initial learning outcomes and assessments will lead to revision of this graduate-level course to move from a lecture format to a readings format augmented with background materials and group analysis. An interdisciplinary offering – Science, Policy and Food – was taught for the first time and is listed for both undergraduate and graduate students within three colleges. An offering in risk communication and perception is in development and will bridge to an emerging graduate program in science communication. Finally, an upper level undergraduate survey course in risk analysis is

in development which will serve undergraduate interests and act as a magnet for the graduate offerings.

#55. D-V-Deconstruction: Ripping Fair-use DVDs for Integration into Classroom Presentations

Dale Layfield and Barbara Speziale
Clemson University

Today's students are known to be a product of the video game era. Secondary classrooms across the country have adapted to meet the needs of these students through integration of SMART Boards, classroom-based computer labs and numerous other technological innovations. In parallel, many organizations and agricultural science industries provide promotional and educational programs in digital formats, such as DVD, that can be used in classroom settings. However, teachers may wish to incorporate specific segments of these fair-use DVDs into their presentations in a single multimedia delivery tool. The primary objective of the workshop was to teach instructors how to 'deconstruct' a "Holiday Lecture" DVD provided by the Howard Hughes Medical Institute (HHMI) in order to assemble the components into a presentation that is 'personalized' for classroom use. The workshop began with a one-day introduction to the topic, including hands-on activities, taught by SC LIFE faculty. The HHMI media team worked with teachers for two days to demonstrate to them how to excerpt components of the DVD to create a classroom presentation. Content experts also assisted teachers in determining specific clips for the multimedia presentation. Results from an assessment of content and delivery by the teachers attending the workshop indicated that they were pleased to learn to acquire video clips from the DVDs, to incorporate the media into thematic PowerPoint presentations, and to use creative techniques for integrating the presentation in an interactive manner with students. Due to its success, the workshop will continue in 2008.

#58. Outcomes of Undergraduate – Faculty Teaching at Lincoln University of Missouri

Adrian Andrei
Lincoln University of Missouri

Teaching partnerships between undergraduate students and faculty consist of undergraduate students helping instruct their own peers. These partnerships are hypothesized to result in greater learner performance, in part due to greater self-efficacy. We tested this hypothesis by employing undergraduate – faculty teaching partnerships at Lincoln University of Missouri between 2006 and 2008 in our Environmental Science classes. To test whether our program resulted in improved test scores and self-efficacy, we employed a two-fold

approach. First, we employed the help of undergraduate peer tutors to provide supplemental education outside the classroom, and we compared test scores between students who attended tutoring sessions and those who did not. Second, we offered extra credit to students in exchange to teaching a specific subject or chapter in class. The later approach involved extensive bibliographical research and multiple consultations with the instructor. With the help of questionnaires, we examined whether students teaching their peers and learners taught by their peers reported increased self efficacy and improved learning skills. Possible answers on the questionnaires ranged from 1 (i.e., “strongly disagree”) to 4 (i.e., “strongly agree”) or 1 (i.e., “not a lot”) to 5 (i.e., “a lot”). Students who attended tutoring sessions with their peers achieved average test scores that were 26% greater than those who did not. Both peer instructors and peer learners strongly agreed that their speaking, listening, and thinking abilities improved. Peer instructors and learners alike reported increased self-confidence, understanding of the subject matter, and greater problem solving abilities. Learners also reported increased creative thinking, greater comfort sharing ideas, confidence in achieving professional goals, and greater motivation. Our results point to peer teaching as an effective instructional tool. However, it must be noted that peer teaching is a time consuming approach, especially for introductory and freshman classes.

#59. Helping Advisors: One Way to Retain Students

Jeannette Moore and Kenneth Esbenshade
North Carolina State University

Our graduating senior survey from the past three years showed the College of Agriculture and Life Sciences (CALs) at North Carolina State University (NCSU) had a higher percentage of students who would choose NCSU again than the university did (80.3% CALs, 76.2% NCSU, $P = 0.05$). In the department of Animal Science, 90.6% of graduates were either very satisfied or moderately satisfied with the Animal Science department (std. dev. = 0.72), and only 9.5% said they would not choose Animal Science again as their major (std. dev. = 2.0). We attribute this to efforts from the department and college to provide timely advising information to the faculty, who in turn are able to better serve as advisors for the undergraduates. Faculty meet once per year for the CALs academic faculty meeting and new teaching faculty are required to attend a session on advising. The Animal Science (AS) Undergraduate Teaching Coordinator (UTC) meets with all new AS faculty to explain the curricula and the advising rules prior to assigning advisees. The CALs maintains an e-mail distribution list of UTC in the college, and all updates and announcements are distributed in a timely manner. The AS UTC maintains an e-mail distribution list for departmental advisors, and when an

advisor asks a question others would most likely benefit from hearing the answer to, the question is sent (anonymously) along with the answer to all advisors in the department. This allows timely, departmental- and college-relevant advising information to be distributed to all advisors in the department.

#62. Retaining the Best through Communications Skills Training

Eric Kaufman, Richard Rateau, Jill Casten, and Holly Kasperbauer
Virginia Tech

Employers consistently cite effective oral communication skills among the top criteria for success of new hires, but often find candidates unprepared in these skills. In addition, recent research indicates that poor oral communication skills and communication apprehension (CA) are linked to lower academic performance and higher college dropout rates as compared to other students. Undergraduates at a large land grant university participated in a required class, “Communicating Agriculture and Life Sciences in Speaking,” specifically designed to reduce students’ CA while improving presentation and public speaking skills. Students’ CA levels were measured using the Personal Report of Communication Apprehension (PRCA-24), which assesses four categories of CA: group discussion, meetings, interpersonal communication, and public speaking. The PRCA-24 was administered to students ($n=56$) pre and post course work. Over the semester, statistically significant declines were observed in three of the four categories (group discussion, meetings, and public speaking). The primary intervention attributed to the change was skills training. Other strategies known to reduce CA include systematic desensitization, cognitive restructuring, and visualization. The findings of this study support continuation of the communications course for undergraduate students of agriculture. However, the CA reduction strategies have broad applications and benefits to courses without a communication focus. The researchers recommend that all college professors consider incorporating CA reduction strategies into student assignments and class routines. The result is likely to be more confident and better prepared graduates entering the workforce.

#63. Undergraduate Teaching through their Experience and Research

Kyungmi Kim
Southern Illinois University

The purpose of this study was to test a learning theory first proposed by pioneer psychologist Lev Vygotsky called the Zone of Proximal Development (ZPD). This theory implies that social interaction and collaborative problem-solving can accelerate learn-

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ing. Vygotsky's views have influenced development of a wide range of psychological and educational theories.

Vygotsky's premise was that people learn through social interactions and by being challenged. With this mind, students in my class were challenged to apply course content to real-world situations. Most learning activities were conducted in small groups where students had to work as team to complete projects outside of class. During class, students were asked to make presentations to their peers about what they had learned in their small groups and to lead class discussions on assigned topics.

At the end of semester, students were given a survey designed to evaluate whether their learning really benefited from the peer interactions. The successes and challenges of this instructional approach were revealed by this evaluation. Most students who participated in the class of 2007 commented that the learning objectives were more easily achieved through the more experiential methods that I employed. The results of the class evaluations veering a two-year period will be shared and discussed during this workshop session.

#67. Preparing Mindful Professionals and Citizens: A Pilot Academy for Leadership in Learning

Steven Jungst, Janette Thompson, Barb Licklider, and Suzanne Hendrich
Iowa State University

Meeting challenges of the future requires citizens who effectively interact with others, and who engage in life-long learning that goes beyond the technical content of most college courses. A group of faculty at Iowa State University is working to help students learn, not only the technical content of their discipline, but also develop critical habits of mind to prepare them to be better citizens. Supported by funding from Higher Education Challenge Grants, we are providing workshops and bi-weekly group meetings to help faculty shift to a learning-centered approach in their classrooms. Faculty participants have made learning-centered changes in more than 60 courses in 18 different departments in five different colleges. The effort to help students take more responsibility for their learning has focused on two trans-disciplinary courses. The courses help students develop more effective approaches to their own learning and foster development of habits of mind that provide students with a better basis for dealing with the complex, issue-laden problems facing them throughout life. Pre and post assessments were conducted for faculty and student participants. On a six-point ascending scale, faculty showed an average increase of nearly two points in their understanding of 10 facets related to learning-centered classrooms. Students showed an average increase of 1.2 points in

their understanding 10 facets related to their learning and habits of mind.

#68. Enhancing Students' Ability to Visualize Spatial Qualities during the Form Study Phase of Landscape Design

M. Mohny and D. Stearns
The Pennsylvania State University

Traditionally, students employ 2D drafting methods in the form study phase of landscape design. While 3D modeling software is used regularly as a presentation tool for perspective views and animated walk-throughs, students rarely design in the third dimension. Many students find it difficult, when working on 2D plans, to visualize the 3D spatial qualities of their design. With software such as Google SketchUp, traditional 2D methods of design can be easily converted to 3D forms. When students gain the ability to view their project from an infinite number of vantage points, they gain a better understanding of how objects relate to each other in terms of scale and proportion. By using 3D modeling technology, students are able to study form relationships more effectively resulting in enhanced understanding of spatial relationships during a critical phase of the design process

#72. Enhancing the Student Learning Environment through Daily Participation of Teaching Assistants in the Classroom

Steven Koeckhoven, Frank Robinson, Arran Lamont, and Dana Penrice
University of Alberta

Graduate student teaching assistants are often found behind the scenes out of the classroom environment completing marking for professors or providing extra help. Some TA's are not incorporated as an active part of the learning environment. There is potential to use a TA as much more than simply a marker. In Animal Science 200 (Principles of Animal Agriculture), graduate student teaching assistants are an active part in the classroom. The TA's attend class just as any other student would and sit with the students. The TA's participate in activities and encourage discussions with the students during lectures led by the professor. A professor and a university classroom can be an intimidating environment and the presence of a graduate TA can ease any student apprehensions. TA's expand on any topics that may have been missed by the professor and ask questions that may start a classroom discussion in this 'surround learning' environment. The TA can act as a liaison between the professor and the students in the class which has been shown to ease student apprehensions in asking questions or conveying their opinions. Student and teaching assistant testimoni-

als from current and previous Animal Science 200 classes will support the need and effectiveness of incorporating graduate student teaching assistants in the classroom environment.

#76. A Novel Dairy Management Learning Experience for Undergraduates: The Dairy Challenge

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University of Idaho

Larry Muller
Pennsylvania State University

Miriam Weber Nielsen
Michigan State University

The North American Intercollegiate Dairy Challenge contest allows undergraduate students to apply their knowledge in a real-world evaluation of the management practices of dairy farms. University faculty partnered with industry representatives to develop one national and four regional Dairy Challenge contests funded by the dairy industry. Approximately 30 four-year institutions in the United States and Canada participate in the national contest each year. The regional contests invite participation from two-year and four-year programs, and feature aggregate teams of students from different institutions. During a 10-hour period, teams of four or five students critically evaluate a commercial dairy farm by visiting farm facilities, evaluating herd records, interviewing the farm owner, and assessing farm operations. Subsequently, teams provide a 20-minute presentation to a panel of judges. Teams are evaluated on their assessment of management practices and soundness of recommendations for improvements. Additionally, teams are appraised on apparent level of preparation, speaking, presentation skills, and responses to judges' questions. Post-contest surveys over a three-year period (n=232) indicated that participants considered the national contest as an effective test of student training in dairy management (9.3; 1=agree, 10=disagree), and networking with industry sponsors was an important element of the contest (9.5). Using cognitive methods, the Dairy Challenge provides students with novel means to apply, analyze, synthesize and evaluate the knowledge they construct in the context of real-world situations. This experience merges students into authentic practices through activity and social interaction with industry professionals in a way similar to that of learning by craft apprenticeship.

#77. Faculty Teaching Conceptualizations and Motivation to Collaborate on Developing a New Interdisciplinary "Science of Foods for Health" Course

Neil Knobloch
Purdue University

Bhimanagouda Patil
Texas A&M University

Faculty from different disciplines need to collaborate to create new courses to teach emerging interdisciplinary knowledge in the life sciences. A course development workshop was conducted to bring interdisciplinary faculty in the fields of horticulture, food science, nutrition, and biochemistry together from three land-grant universities to design a new interdisciplinary course to teach functional foods to undergraduate students. Professors' epistemological and motivational beliefs shape how they think about knowledge, teach it to others, and exert effort in teaching their students. A questionnaire was developed and administered before and after the workshop to assess professors' teaching conceptualizations and motivations to teach a new interdisciplinary course in a collaborative partnership. Results showed professors strongly agreed (92%) students should develop new ways of reasoning about the subject matter and know how to apply the subject matter in real life. Prior to the workshop, professors believed that the important reasons to collaborate were: trust among faculty members, ability to contribute with a valuable expertise, the benefits of interdisciplinary work, and the collaborating university. Professors were mainly concerned about the quality of the project result due to a fragmented vision, and the interference in collaboration caused by conflict avoidance and competitiveness. The workshop reduced the professors' concerns, such as competitiveness and conflict avoidance (17%), and increased the motivation to develop a more diversified program as well as the importance given to the participants' universities (14%). Finally, professors agreed they learned to think from students' perspectives (20%) and to integrate different knowledge (20%). This project is funded by a USDA Higher Education Challenge Grant (#2006-38411-17095).

#79. Creating a New Interdisciplinary “Science of Foods for Health” Course through a Collaborative Partnership of Multi-state Land Grant Universities

Bhimanagouda Patil
Texas A&M University

Neil Knobloch
Purdue University

New courses need to be developed for undergraduate students to learn emerging interdisciplinary knowledge in the foods for health. The purpose of this project is to develop a new interdisciplinary undergraduate course focused on foods for health. A course development workshop was conducted to create a collaborative partnership of faculty in the fields of horticulture, food science, nutrition, and biochemistry from three land-grant universities and develop a course syllabus, including concepts, topics, and desired learning outcomes. Observation field notes and faculty responses to open-ended questions at the end the workshop were used to assess the quality of the workshop and determine if the workshop addressed the professors' expectations. Results showed the workshop improved 85% of the professors' knowledge about the curriculum design process, and 77% stated the workshop met their expectations. During the workshop, professors envisioned the course from their own disciplinary perspectives rather than an interdisciplinary course from a new synergistic perspective. At this point, a professor stated, “We need to think more interdisciplinary about our approach.” After much discussion, professors agreed the course would begin by framing the problem and establishing opportunities, then focused on consumer preferences and educational strategies (people), followed by bioactivity (science), and followed by optimizing and research, recommendations, and policy (technology). After the process was completed one professor acknowledged, “This process seems familiar with an interdisciplinary research project.” Eventually, the goals of the workshop were achieved and the faculty expressed appreciation and need for developing an interdisciplinary course by partnership efforts. This project is funded by a USDA Higher Education Challenge Grant (#2006-38411-17095).

#84. Preserving and Enhancing the Virtual Museum of Minerals and Molecules

Phillip Barak
University of Wisconsin-Madison

Innovative teaching approaches that employ technology-enhanced learning require consideration of replacement cycles to avoid technological obsolescence. The Virtual Museum of Minerals & Molecules,

placed on line in 1998 as a web-based interactive display of 3D structure of minerals and molecules of environmental interest, originally operated on all major computer operating systems and browsers of the time, using proprietary browser plug-in technology. In the intervening years, platform interoperability has been reduced to a single operating system and single browser, and user resistance to installing plug-ins has increased. Fortunately, an open source molecular visualization community has arisen and, using Java and JavaScript, has allowed the VMMM to be completely rewritten and reformulated for the entire breadth of modern operating systems and browsers. After a year of preparation, on a single day, the entire VMMM was transformed from its plug-in-based former self to a Jmol-enabled version. Over 35,000 unique visitors are served annually at <http://virtual-museum.wisc.edu>

#86. Using Student Farms for Curriculum Enrichment and Student Retention at Colleges and Universities in the United States

Anna Leis and M. S. Whittington
The Ohio State University

College and university student farms can play an important role in enriching curricula by integrating research, extension, and teaching missions, reinforcing classroom instruction, and improving job skills and career training. Student farms are defined as sites of agricultural production and marketing (associated with a college or university) at which undergraduate and/or graduate students have, through coursework and/or internships, the opportunity to conduct independent and collaborative projects that supplement classroom instruction with “real world” experience. The role of student farms in college curricula began decades ago, but recently their initiation has increased. Many of the recently established farms have been in conjunction with courses or curricula in organic and sustainable agriculture, which have been and are being developed in response to increased interest in this area. Despite the increasing presence of student farms, a study of their structure, programming, and operating principles and resources had not been completed. Consequently, the development of new student farms has been hindered by lack of comprehensive knowledge of their role, logistics, and potential as a means for curriculum enrichment and student retention. Therefore, using an online survey of student farm managers (collected using a snowball approach to frame development), telephone interviews, and site visits, a comprehensive description of the current status of student farms in the United States, their use in curriculum, internships, development of employability skills, and retention of students was compiled for use by Associate Deans and others interested in student farms as a tool for student engagement.

#89. Life Skills Developed During University Equine Training Courses

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Utah State University

N. Jack and J. Jogan
University of Arkansas

L. Gagnon

Montana State University

Many two and four year universities and colleges offer equine programs. While students enter these programs with the intent of pursuing a career in the equine industry, many will ultimately have a career in another field. With this in mind equine programs should evaluate whether enrollees develop skills that may help them regardless of career path chosen. Toward that goal, three universities teaching a semester long course in equine behavior and training sought to determine whether enrolled students gained useful life skills during the semester-long course. An IRB approved survey instrument was developed and administered in an effort to determine changes in interpersonal skills levels for ten criteria. For all ten criteria studied, enrollees reported a positive shift in life skills obtained during the course. Most notable was a mean increase of 24% in understanding and use of non-verbal communication skills, a 21% increase in patience, and a 14% increase in confidence as a leader.

#90. TIPS for Writing Introduction (Chapter One) of Thesis/Dissertation: The Cone Analogy

Rama Radhakrishna

Penn State University

Writing a clear, well-articulated, and convincing introduction chapter for a thesis/ dissertation is very important to attracting and sustaining readers' interest. The purpose of this poster presentation is to provide guidelines for writing introduction or chapter one of a thesis/dissertation using a cone analogy where the top part of the cone represents a broad topic or a problem, while the tip of the cone represents the specific problem indicating filtering of information into a logical sequence. In addition, TIPS for writing chapter one of thesis/dissertation are also presented. Using the cone analogy will help graduate students and faculty alike to develop an outline for writing introduction chapter.

The purpose of writing the introduction chapter is to introduce the problem under investigation to the readers. Begin the introduction chapter by establishing the importance of the problem. Second, document the evidence of the problem with facts and figures. Synthesis of up-to-date literature relevant to the problem is critical for establishing the importance of the problem. The first two slices of the cone (impor-

tance and evidence) should help identify the gaps (third slice) relative to the problem. The need for a thorough review and synthesis of literature pertinent to the problem is critical for providing a solid rationale for your study (slice four). By completing slices one through four of the cone, you are now ready to tell the reader how you will carry out the study (slice five) by specifying the purpose/goals, research type, and objectives/research questions and/or hypothesis to be tested.

#92. Assessing the Need: Communications and Marketing Resources and Training for Oklahoma Cooperative Extension Service Educators

Shelly Sitton, Amanda Erichsen, Dwayne Cartmell, and Charles Cox

Oklahoma State University

While branding Cooperative Extension is a desire for the Oklahoma Cooperative Extension Service (OCES), no well-defined marketing vision or plan is available for its educators. This study provides benchmark research to identify the perceived needs of educators regarding communications efforts, media sources, and resources of OCES educators. According to Knowles' andragogy theory, learners must understand how a learning experience will help them improve their skills and attitudes in work situations. The facilitators of any OCES training can apply the principles of andragogy by working with educators to develop what they need to learn using the learning environment best suited for them. Through a survey administered at a statewide conference in January 2008, OCES educators shared their media resources, perceptions of how often and how well they use specific media, how they prefer to deliver information to clientele, and their level of training regarding mass communication skills. OCES county educators perceive to have the highest skill in developing newspaper articles, Extension fliers or newsletters, and e-mail, and they prefer to use the same methods to reach their audiences. OCES educators spend an average of 17 hours per month in marketing/communications efforts. A majority of OCES educators expressed an overall need for more access to communications and marketing assistance, training, and resources. The recommended next step for OCES administration is to develop a marketing plan and to develop marketing and communications training to meet the educators' perceived needs in a manner that is applicable for everyday use for county educators.

#93. Students' Attitudes toward Virtual Experiments in Food Processing

Mark Morgan
Purdue University

Virtual experiments were incorporated into a junior-level food processing course to study whether students' learning styles affected their attitudes toward the use of these computer-based laboratory exercises. These virtual experiments include background information on the processing concept, experimental procedures, a "process simulator" and data analysis instructions incorporated into a web-browser-based software module. Four virtual experiment modules were used in the course and a survey instrument was developed to assess the students' attitudes regarding the user interface, information content and effectiveness of each module. Previously, each student's learning style was assessed and categorized based on Gregorc's four categories of learning styles. Results from the virtual experiment surveys showed that students' learning styles did not affect their attitude towards the virtual experiments. However, some differences were observed between learning styles in the time required for completion of the exercises. Overall, the results suggest that virtual experiments may be used for students regardless of their dominant categories of learning style.

#94. Retaining the Best Students and Small Manufacturers in Oklahoma

Cindy Blackwell
Oklahoma State University

The New Product Development Center (NPDC) at Oklahoma State University (OSU) was established to assist small, rural manufacturers throughout Oklahoma with everything from engineering assistance to business planning to marketing communications in order to retain manufacturers as viable workplaces in rural areas. To assist with marketing communications projects, OSU Agricultural Communications (AGCM) students are assisting NPDC clients with developing strategic marketing communications materials for the small manufacturers offering the businesses the unified image needed to remain viable in a demanding marketplace. AGCM seniors are getting a valued team experience creating marketing materials in real-time with the outcome being excellent additions to their portfolios. Using Kolb's Experiential Learning Model, the AGCM class is structured so that lectures offer abstract conceptualization, lab times offer active experimentation, readings and assignments offer concrete experience, and weekly memos and group update presentations offer reflective observation. Students explore everything from industry audits to team dynamics while learning how best to meet the clients' needs.

The experience is filled with real-world experiences complete with successes, disappointments, and businesses that close up shop mid-semester. Both the successes and challenges help students to better understand the everyday struggles of small, rural business owners, and many students begin to demonstrate an appreciation for the contributions small, rural manufacturers make to the state. This presentation explains the framework used to offer students achievable challenge from which they can learn. While the facilitation is a challenge, the outcome helps to retain both manufacturers and students in Oklahoma and some projects have won state and national awards.

#97. Innovations in Food Systems Education: Interdisciplinary, Service-learning and Community-Based Research

Christopher Koliba
University of Vermont

Food systems may be understood as complex, adaptive systems of: social actors, including farmers, land use regulators, distributors, marketers, retailers and restaurateurs; natural ecosystems; and public policies. For students to gain an appreciation of the interplay of these actors within the dynamic social, natural and political systems, traditional course structures lead to significant pedagogical challenges. For students to apply such systems thinking to the natural and social food cycle innovative pedagogical approaches are called for. Students must approach food systems issues through a decidedly interdisciplinary lens that provides them with opportunities to have direct access to multiple components of the food system. The center piece of the food system project was a three credit, interdisciplinary "Going Local-Food Systems" seminar that relied on a combination of service-learning and community-based research approaches used within the context of an interdisciplinary team teaching environment involving faculty from community development, public policy, plant and soil science, animal science, and nutrition.

The objective of this presentation is to provide the audience with: 1. An overview of the curricular design; 2. An assessment of the impacts of the curriculum on student learning outcomes; and 3. Generalized implications for replicated the curricular design. The author provides a descriptive account of the innovative food systems project undertaken by multiple departments within the College of Agriculture and Life Sciences at an Eastern Land Grant Institution. The results of data collected from student and community partner surveys are analyzed, with results indicating that student learning outcomes were positively impacted by the curricular innovations used in the Going Local-Food Systems course. Additional interview data culled from

participating faculty interviews surfaced a range of opportunities and challenges to conducting the project. Lessons for the replication of the curricular design are discussed.

#98. Integrating Service-Learning in Wisconsin Colleges of Agriculture, Life Science and Natural Resources

Jerry Nechville

University of Wisconsin-River Falls

Stanley Szczytko

University of Wisconsin-Stevens Point

Sue Curtis

University of Wisconsin-Platteville

Three University of Wisconsin comprehensive baccalaureate institutions that offer programs in agriculture, life science and natural resources, collaborated to integrate service-learning activities into their curricula. The campus coordinators and participating faculty attended a two day training on service-learning led by staff of the Wisconsin Campus Compact office. Faculty from each campus then enlisted and trained students in service-learning methodology. This corps of students acted as Service-Learning Assistants, helping faculty with the planning and implementation of service-learning projects in individual courses. Through this project a total of 25 courses across the three campuses have integrated a service-learning component. Nearly 400 students have been impacted across a diverse set of program areas including: animal science, dairy science, agricultural business, and horticulture, land use planning, wildlife management, water resources, forestry and recreation, environmental engineering, biology, reclamation and conservation, waste management and recycling, agricultural and environmental education and geography. The service-learning activities in each course result in a product or a service ranging from feasibility studies, surveys, brochures and videos, to landscape designs, comprehensive land use plans and lesson plans. At first, students feel some fear and anxiety about applying their classroom knowledge to a real world situation; by the end of the project they are more confident about their roles and skills. As information pertaining to completed projects is disseminated, the campuses are increasingly being seen as a resource for local government, agencies and the general public. Faculty report they are being proactively contacted by a variety of groups with future project opportunities.

#100. The REAL Deal

M. Susie Whittington, Jeremy Falk, and Whitney Beck

The Ohio State University

The problem solving approach to teaching is a widely-accepted strategy in Agricultural Education. At a land-grant university, agricultural extension students enrolled in the teaching methods course had a new problem presented on the first day of class: they will teach first grade students on the last day of class! The objective was to give these students real-life opportunities to teach and enhance the transfer of learning, while improving agricultural literacy in young children. To achieve this goal, a partnership with a local elementary school was created. The college students created real dairy lessons for their laboratories, and then visited the first grade classes early in the term. Each group of college students used the methods that they demonstrated in their labs to teach their respective group of first grade students. While visiting the elementary school, the future extension educators conducted a demonstration with the children on how to make real butter. Taking this experience and adding material learned in the course, the college students improved their teaching methods. During the last week of the course, the same 34 first-graders visited the university's dairy farm, a non-traditional learning environment. The college students were again able to practice their methods and show the first graders the importance of dairy farms and agriculture. Content of the dairy tour had to include science standards; each group focused on a different benchmark or standard. This collaboration built relationships between elementary teachers and future extension educators, while incorporating real teaching of young students about agricultural literacy.

#105. Gender Affects of Undergraduate GPA and GRE Scores on Graduate Student Success

Marcy Beverly, Matt McMillan, and Kyle Stutts

Sam Houston State University

Two factors commonly considered when students apply for graduate school are undergraduate grade point average (GPA) and scores on the Graduate Record Examination (GRE). This study was conducted to determine if a relationship existed between student performance on the GRE and undergraduate GPA, and subsequent performance in graduate school as indicated by the graduate GPA. Data analysis was conducted to determine if a gender difference existed in GPAs and GRE scores among graduate students in the Department of Agricultural and Industrial Sciences at Sam Houston State University. These data were analyzed to determine the mean GRE score, mean undergraduate GPA and

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mean graduate GPA by gender. The results indicated that females averaged a 3.25 undergraduate GPA, while males were a 3.09 GPA with no significant differences ($P > .15$). Mean graduate GPA for females and males were much closer at 3.78 and 3.73, respectively, no significant differences existed ($P > .44$). Males performed better ($P < .05$) on the GRE with a mean score of 939.30 compared to females with a mean score of 867.3. Data were also analyzed to determine if a relationship existed between GRE score and undergraduate GPA or graduate GPA. Results indicated a positive correlation ($P < .05$) existed between undergraduate GPA and GRE score ($r = 0.37$), but there was no correlation between graduate GPA and GRE score. Results indicated no difference between males and females for undergraduate or graduate GPA, but males did outperform females on the GRE. These data also indicated that a relationship does exist between undergraduate GPA and performance on the GRE.

#107. Increasing Freshmen Integration and Retention through Student-Led Animal Science Courses

Barry Delks, Alan Grant, Mark Diekman, Mark Russell, Rod Allrich, Amanda McGuire, and Colt Daughtery
Purdue University

We conducted an Undergraduate Faculty Teaching Project to increase freshmen integration and retention through student-led courses. This USDA Higher Education Challenge Grant allowed us to utilize undergraduate students to lead small group discussions. This Animal Sciences Orientation course at Purdue University included 160 students during the first eight weeks of the spring semesters of 2007 and 2008. Approximately 20 small group discussion leaders were trained and coordinated by a faculty-supported undergraduate. Student leaders served as role models and mentors in the small group. Topics included: clubs, careers, majors, research, contemporary issues, and study abroad. Data collected on matriculated freshmen indicated retention in the subsequent spring semester to be 83.2% and 88.7% in 2006 and 2007 respectively. During the last class, students completed questionnaires to assess the activities, topics, and effectiveness of the learning method. We collected qualitative comments and quantitative responses (scale of 1-5; 1 = worst and 5 = best). Group discussion leaders' effectiveness was ranked either 4 or 5 by 74% of the students. Seventy eight percent stated small groups helped them meet more Animal Sciences students and 71% stated they learned more about Animal Sciences. A debriefing session was held and evaluation of the student leaders' feedback was collected. Discussion leaders stated they gained skills in group facilitation and struggled to find balance between leading and

facilitating the discussion. The involvement of undergraduate group discussion leaders added value to the freshmen experience, but the quality of the experience depended on the training and facilitation skills of the undergraduate leaders.

#110. You Can Make them want to BEHAVE

Beth Burritt and Kathy Voth
Utah State University

Have you ever wondered how livestock know what to eat and avoid when grazing on pasture or rangelands? Is food intake only determined by the nutrient content or intake rate of forage? Consider the following situations: 1) Three-year-old sheep won't eat wheat. 2) Cattle prefer to graze in the uplands rather than in or near riparian areas. 3) Cattle cost less to finish when given choice of foods rather than a total mixed ration balanced specifically for them. 4) Cattle in the West eat weeds such as distaff thistle, Canada thistle, late-season diffuse knapweed and more, weeds they aren't supposed to eat. 5) Some cattle in the Netherlands eat dead rabbits. Why do animals behave this way? Range and Animal Science students are taught about the nutrition of livestock and the nutrient composition of animal feeds and forages. However, little time, if any, is spent on diet selection of livestock or how experiences in life and feedback from plants can affect diet selection. Understanding animal behavior can enable managers to change livestock habitat preferences, improve weight gains and food intake, transform weeds into forage, help livestock eat and detoxify toxins in forages more efficiently, even change the way an animal's body functions. CDs with slides shows and videos for classes in sheep and beef production, rangeland management and range and ruminant nutrition will be available. Materials are based on 25 years of research on how ruminants choose what to eat and where to live.

#111. Peer Teaching/Learning: What Can We Learn From Each Other?

Amy Smith and Bryan Garton
University of Missouri

Individuals involved in education are constantly seeking new methods and techniques to engage students in learning and increase their academic success. One innovative approach being embraced by higher education is peer teaching/learning. Peer teaching/learning encourages interaction between students and faculty, develops reciprocity and cooperation among students, uses engaging learning techniques, and respects diverse talents and ways of learning. A peer teaching program for undergraduate courses in leadership and communication was created at the University of Missouri. Three courses have utilized Peer Learning Assistants (PLAs) since

inception in fall 2006. Since that time, approximately 300 students have had the opportunity to experience and benefit from peer teaching/learning. While challenges were involved in planning and carrying out a peer teaching/learning program, the benefits were numerous. Students being “taught” benefited from the expertise and knowledge of older, more advanced students; while students performing the “teacher” role benefited from the experience by gaining additional employability skills and experience in education. To successfully utilize a peer teaching/learning approach, faculty members must be prepared to invest additional time into the planning and preparation of course materials and insure that the PLAs are adequately informed of and prepared for their role. Additionally, funding must be available to allocate a stipend for PLAs. Finally, students enrolled in the courses must be made aware of the PLAs and their experience and credibility so that the PLAs are utilized more often throughout the semester.

#112. An Undergraduate Peer Teaching Approach to Portfolio Development across the Curriculum

M. Susie Whittington, Jamie Cano, Daniel Foster, and James Connors
The Ohio State University

A portfolio is a reflective self-portrait of the learner. More and more students are preparing portfolios to document their academic preparation while in college. This project utilized undergraduate peer teachers to introduce electronic portfolios throughout the agricultural and extension education (AEE) curriculum. Four undergraduates were recruited to work with undergraduate AEE majors in two courses: Introduction to AEE, and Senior Seminar in AEE. The peer teachers held regular office hours to provide one-on-one assistance to the students as they developed their electronic portfolios. The students utilized Folio21®, a standard electronic portfolio format supported by the career services office of the college of agriculture. The four peer teachers spent seven class hours instructing students about Folio21®, held regular office hours making instruction assistance available for an additional 40 hours in the 10 week quarter. Peer teachers consulted with 22 students a total of 36 times resulting in 40 completed electronic portfolios. Students' portfolios included their professional resumes, philosophy of teaching, philosophy of experiential education, units of instruction, lesson plans, extension programs of work, samples of their scholarly writing, photos, and digital videos. Students keep their portfolios on the college's career services website and can give any potential employer access to view their accomplishments. All students in the two courses left with enduring evidence of their scholarly achievements as they complete their degree and prepare for their careers in agricultural and extension education.

#113. Principles of Teaching and Learning Assessment (PTLA) - Developing an Observational Instrument

M. Susie Whittington and Daniel Foster
The Ohio State University

“A critical purpose of postsecondary education is to prepare students for their future professional lives” (Thompson, Licklider, & Jungst, 2003, p. 133). To meet this purpose, students' critical thinking abilities must be improved. Institutional examination of current practice is critical including, “. . . a more intense reexamination of the tried and true methods of instruction . . .” (Bess, 1998, p. 3). Ewing and Whittington (in review) found that professors and students should work together to increase the level of student engagement through a class session. The Principles of Teaching and Learning Assessment (PTLA) study's purpose is to develop an instrument to measure the instructor variable of frequency of utilization of principles of teaching and learning guided by the following research objectives are: operationalize principles of teaching and learning by developing concrete classroom observation criteria for each principle; establish face and content validity of the PTLA as measured using qualitative data from a panel of experts; establish reliability of the PTLA as measured through a pilot test and analysis of test-retest data; and write guidelines for using PTLA during class sessions. The implementation of principles of teaching and learning as presented in *Methods of Teaching Agriculture* (Newcomb, McCracken, Warmbrod & Whittington, 2004) could lead to well-planned lessons, questions gained, and improved student interest. If there is a relationship between student engagement (Ewing & Whittington, in review) and utilization of these teaching and learning principles, that knowledge can benefit universities in achieving student success through student engagement at higher cognitive levels. Having an instrument to measure the principles of teaching and learning will allow for appropriate analyzing of instructional practices currently used. Future applications include using in different disciplines and contexts.

#114. The Global Seminar Project - Designing and Implementing an Experiential Learning Environment via Technology

Dennis Duncan and Maria Navarro
University of Georgia

Pavli Mykerezzi
Virginia Tech

The Global Seminar (GS) is an international collaborative effort that offers a course to undergraduate and graduate students on the Environment and

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Sustainable Food Systems. The conceptual framework of the GS is based on a constructivist approach to teaching and learning, that promotes critical reflection and experiential learning based on real global problems. Specifically, the GS uses case studies of real events and people to investigate key concepts and policy issues that are embedded in real world problems. The pedagogical objectives of the GS include: 1) Develop and organize an interdisciplinary knowledge base in the form of modular case studies; 2) Build linkages with, and foster participation by institutions and subject matter specialists; 3) Assist students in developing higher order cognitive and learning skills needed to address problems of global proportion; 4) Develop a diverse and inclusive student community that cultivates mutual cultural respect and diversity of opinions; and 5) Develop delivery systems to incrementally make this seminar accessible across the globe. To meet the aforementioned objectives, faculty must successfully plan and organize a learning environment that uses guest lecturers, asynchronous (WebCT® and Blackboard®) and synchronous platforms (Skype, Tandberg videoconferencing, and Horizon Live®). We present an overview and analysis of the planning, implementation, and evaluation of a new GS course in the University of Georgia, including: Securing infrastructure and required technology; organizing international student groups; designing and developing cluster web pages; scheduling, organizing, and implementing educational chat sessions; establishing videoconference protocol; and continuous assessment of pedagogical processes.

#115. The Integration of Values Clarification for Millennial Students in Colleges of Agriculture

Dennis Duncan, Jennifer Williams, and Chris Morgan

University of Georgia

Although today's college student must deal with many of the same developmental issues that have existed for past generations of college students, students classified as millennials (born 1982-2003) have been reared in a culturally different and complex environment. Newton (2000) concludes the current turbulent social landscape "has dramatically affected the attitudes, behaviors, and aspirations of students and altered how the college years function in helping students make the transition from adolescence to adulthood" (p. 8). Couple this with the "ubiquitous nature of technology in their lives" (p. 29), and higher education has a new breed of student that has different learning styles and an increased need for assistance in personal clarification and development (Nicoletti & Merriman, 2007). Values development and clarification are key concepts covered in an undergraduate leadership education course at a land-grant university in [state]. During the course, students are asked to identify what they

believe are their core values, and why they hold these values as important. Students are also challenged to develop their leadership philosophy, leadership dashboard and complete a series of leadership inventory questionnaires. Quantitative and qualitative data collected not only assists the student in identifying their core values and strengths as a leader, it gives faculty insight into what shapes and motivates this generation to lead and serve both nationally and internationally. Conceptualizing and verbalizing values is paramount in personal leadership development. Komives, Lucas, & McMahon (2007) note that personal values clarification is the first step in becoming an ethical leader.

#124. Are International Travel Courses Worth the Investment?

Robert Lane and Darcy Hubbard
Sam Houston State University

The Department of Agricultural and Industrial Sciences at Sam Houston State University has offered International Study (Travel Abroad) opportunities through formal coursework and out-of-country travel experiences intermittently for the past seven years. The format has been to offer two concurrent summer courses during the first summer term, with approximately two and a half weeks of the summer term spent on the SHSU campus in a formal classroom setting and about three weeks of the term in the country of destination. To date, such experiences have been offered in Mexico, China, and Costa Rica. While prior research has dealt with the perceived benefits of study abroad experiences by undergraduates and graduate students alike, few have attempted to determine the long-term effect such experiences have on the individuals involved. Through a survey of current and former students, as well as participating faculty members, the goal of this study is to determine if such experiences were instrumental in participants' current profession/occupation, influence on one's current level of international travel and involvement, and current attitudes, opinions and beliefs regarding those from other regions of the world. Additionally, this research will address personal issues related to participants' international experiences, such as changes in comfort level involving travel abroad, personal and academic knowledge gained during the experience, and whether the experience is perceived to have improved teamwork, interpersonal skills, problem-solving skills, and motivation to help others.

#126. "Agriculture, the Arts and Society:" Meeting the Goals of a Curriculum for Liberal Education

Cynthia Wood and Donna Moore
Virginia Tech

At Virginia Tech, a comprehensive land-grant university, general education requirements are found

in the Curriculum for Liberal Education (CLE). One of the seven CLE areas is Creative and Aesthetic Experience. ALS 1004 "Agriculture, the Arts, and Society" was developed specifically for that area of the CLE. Since 1996, the course has grown from a small (n=28) class of agriculture majors to one that routinely fills to capacity (n>100) with students representing a variety of majors. In spring 2008, 79 of 124 students were majoring outside Agriculture and Life Sciences. A one-credit, pass-fail course, ALS 1004 encourages active student participation through in-class assignments and small-group discussion, as well as an experiential photography project that directly engages students in the creative process. The final exam requires students to summarize what they have learned in the course, and how well they feel they have met the course objectives and CLE goals. The majority of students from outside the college feel that they have a better understanding of agriculture and how the arts do link to agriculture. Students majoring in agriculture often note that this course affirms their choice of major while allowing them "permission" to venture outside their professional choices. Student perceptions of the course are generally quite positive, based on the final exam, written comments provided during the course evaluation process, and enrollment requests. Most of them enjoy the give-and-take in class generated by the diverse enrollment but by far the photography project is the most popular aspect of the course.

#127. Enhancement of Agricultural Biotechnology Training at Virginia State University

Brian Sayre
Virginia State University

To be competitive in the job market, agriculture and biology graduates must have an understanding of biotechnology. Students beginning studies at universities need an increased awareness of biotechnology to be competitive with their degree. We are in the early stages of a project to increase biotechnology training at Virginia State University and surrounding school systems. For K-12 teachers and students, we have developed workshops held for seven Saturdays and culminating in a two day mini-symposium on bioinformatics. The workshops provide expert training in areas of biotechnology and suggested lesson plans and materials that teachers can use in their classroom. Additionally, we have conducted programs in the classroom at schools to introduce biotechnology to the students. The initial programs were well received and attended by about 25 students. For current undergraduate students, we have sponsored speakers to meet with students on topics such as undergraduate research and career opportunities in biotechnology. These seminars have been interdisciplinary in nature with students from biology, agriculture, mathematics, computer science and engineering all participating. We have also

developed undergraduate research opportunities for students and currently have about 12 students involved in biotechnology research projects. This is an increase from previous years, indicating our initial efforts to increase awareness have been successful. The nature of careers in agriculture and biology is changing and students need more training in biotechnology to be competitive in the job market. Increased awareness of biotechnology in the high school and undergraduate programs will increase the opportunities for these students after graduation.

#129. An Interdisciplinary Approach to Enthusiastic Learning and Communication

Arran Lamont
University of Alberta, Edmonton

University courses can be daunting for not only first and second year students but for anyone. Lackluster labs, mind-boggling midterms, painful papers, and severe schedules are often a highly stressful amalgam, resulting in a less-than-fulfilling university experience. Students coming from far and wide are usually subjected to a curriculum that is largely monotonous and unappealing. Students have talents and interests that lie outside the classroom. Interest in the arts, or some form of it, is not uncommon for a science student. People accept that students learn in different ways. Animal Science 200 is a class that values these individual qualities and encourages students to incorporate them into the presentation of their projects. A project entitled There's a Heifer in Your Tank was designed to accomplish exactly this. In groups of four or five, students prepare a three and a half minute PowerPoint presentations, made up of at least ten science points, regarding an agriculture issue. During the term, students have a presentation night in which they communicate the issue they have chosen to over 600 people from the general public. We as educators encourage the students to utilize their diverse qualities as a vehicle to effectively communicate their chosen issue. Presentations often include drama, comedy, singing, dancing or even fiddle playing. Through support and unconditional positive regard, student engagement is elevated. By introducing this interdisciplinary pedagogical approach, students have reported on survey data that they learn better.

#130. Levels of "Academic Challenges" Provided to Students in Selected Classrooms

Dale Layfield
Clemson University
Laura Morgan

It is imperative that animal science graduates possess a balanced combination of base knowledge and independent thought combined with critical thinking ability. In order to produce students with

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this level of cognitive capability, challenges must be provided in academic classrooms that appeal to higher levels of learning. Popular opinion indicates that students in an evaluation class gain needed and useful experience in analytical and critical thinking, judgment, and written and oral communication. Our objective is to qualify the level of academic challenges provided to students in selected classrooms using a researcher-developed instrument. A sample population consisted of upper (300 – 400) level courses (n=10) in an animal and veterinary sciences department. Courses were categorized as (E) evaluation (n=2) or (N) non-evaluation (n=8). All “academic challenges” provided in and outside of class were assessed to determine levels of cognition. All data were analyzed for frequency, type and number of challenge presented, and contribution to final course grade. Finally, a comparison was made to determine if level of academic challenges differed between evaluation and non-evaluation courses. All courses averaged 13.9 total challenges. Evaluation courses averaged 25 challenges, with 72% at higher levels of cognition while non-evaluation courses averaged 11, with 20.5% at higher levels of cognition. Students enrolled in evaluation courses were exposed to higher levels of cognitive thought. Plans are currently in progress to assist instructors of non-evaluation courses to create an environment that facilitates higher levels of cognitive development.

#131. Retaining the Best by Creating Workplace-Ready Graduates through Interdisciplinary Senior Capstone Innovation Projects

Shelly R. Sitton, Dan Tilley, Paul Weckler, Cindy Blackwell, Rodney Holcomb, and Ron Delahoussaye
Oklahoma State University

Marcia Tilley, W. Howard, Richard Cavaletto, and Mark Zohns
California Polytechnic State University

David Jones and A. Yianaka
University of Nebraska-Lincoln

Academic programs strive to retain and challenge our best students and create workplace-ready graduates. Students who learn effective communications, problem-solving and critical-thinking skills are more valuable to employers. This project addresses an immediate need to prepare engineers, business specialists and communicators to address interdisciplinary innovation development problems faced by U.S. small-sized manufacturers. Separation of engineering/technical components from business and communications components reduces the possibility undergraduate students will learn innovation best practices. To address this issue, 12 faculty in eight

departments at three universities received a three-year USDA Higher Education Challenge grant (funded at \$465,595) to conduct an interdisciplinary capstone classes and senior projects. Interdisciplinary teams of students in engineering, business and communications will help companies design innovative products and develop innovative business, marketing and communications strategies. To begin the project, faculty taught a one-credit “Introduction to Innovations” course in Spring 2008 to provide undergraduate students with interdisciplinary, problem-based, real-world, learning experiences through team assignments including a business/marketing plan, communications products, and a working prototype of the innovation. The educational strategies for the project are interdisciplinary, problem-based, experiential learning and curriculum development. The curricula materials created and distributed cause students to apply their knowledge to real-world problems requiring cross-functional solutions. When completed, this project will: 1) help universities retain our best students; 2) create workplace-ready graduates capable of participating in and eventually leading private sector innovation; and 3) enhance the educational experience of agribusiness, engineering and communications students; and 4) develop and disseminate interdisciplinary curricula for use at other universities.

#133. Retaining the Best: Meeting Students' Needs through Faculty Advising

Amy Smith and Bryan Garton
University of Missouri

Research touts the importance of academic advising with regard to student satisfaction and retention. A key to quality academic advising is assessing and meeting the needs of students. The current literature is inconclusive with regard to the style of advising that works best, what students need/expect, and what advisors/administrators think about advising. The purpose of this study was three-fold: 1) assess the importance of academic advising characteristics as perceived by undergraduate students in the College, 2) examine faculty performance, as perceived by advisees, with regard to the academic advising characteristics, and 3) identify factors that influence students' academic advising needs and satisfaction. The Faculty Advising Instrument and Insight Inventory® were distributed via email to all students enrolled in the College (N = 1619). A total of 726 students (44.8%) completed the instrument. Overall, students reported a high level of satisfaction with faculty advisors' performance. Results indicated that students' academic advising needs and their evaluation of faculty performance vary little based on sex, academic level and undergraduate degree program. Using the Borich needs assessment model, ten items were identified for potential enhancement. The three items with largest

mean weighted discrepancy scores related to identifying employment opportunities after college, providing information about financial assistance and being aware of academic progress. The Insight Inventory® indicated that the largest proportion of students were slightly indirect, very outgoing, very steady and moderate when dealing with details. No relationships were found between students' personality/communication profiles and academic advising needs.

#134. Addressing Retention through an Agriculture First-Year Experience Course

K. C. Ellis and T. W. Broyles
Virginia Tech

Several studies have shown that there is direct correlation between factors such as pre-entry attributes, learning style, and study skills to student retention rates of freshman in nationwide colleges of agriculture. The statistics are grim: more students will leave prior to degree completion. Studies indicate that many students do not progress beyond the second semester of their freshman year and that special attention is needed to positively influence dropout decisions as early as their first semester. Coordinators of the Agricultural Sciences undergraduate degree program at a land-grant institution have experienced similar trends of students not maintaining a successful course towards degree completion. In an effort to foster academic, individual, and community success, and to increase student retention rates, coordinators have developed a first-year experience course that frames its focus based on factors affecting a student's departure decision as addressed by Tinto's retention model. This innovative approach to course development looks to plant seeds of thriving academic and social integration through scaffolding stages: planning, preparation, and performance and by asking students to make a full investment in and commitment to their college experience. The theoretical and conceptual framework for the experience comprises components of Tinto's retention model as addressed by the new course, including basic principles used in planning, strategies used in selection of course themes, and contents of the course including specific assignments and projects. Further research will be conducted with the implementation and evaluation of the course's effectiveness in: delivery, connection of content, and ability to increase student retention.

#136. Using Movies to Teach Leadership Powerfully

David Jones and Sara Brierton
North Carolina State University

Movies limit our sensory inputs to two: we watch a large visual image on screen as we sit in a dark room and listen as sounds surround us. We are enveloped

by the movie, pulled into the images, thoughts, feelings, and ideas on screen. We are completely engaged and connected, and we react on a personal level. This is the power of movies. While the instructional use of movies is not new, successful utilization of learning guides, establishment of context surrounding the movie, and cultivation of student-centered analysis and reflection are innovations that raise teaching leadership ideas and theory with movies to a new level. This is the teaching power of movies.

Strong visual images in movies seem to reinforce learning and knowledge retention more effectively than concepts that are only written or spoken. By using learning guides we demonstrate the relevance of the objectives of the course, focus student reactions as they interact with leadership concepts and themes, and strengthen critical evaluation skills. Using a learning guide before a movie places questions in the student's mind, and primes the search for answers and connections. Students are empowered to find relevance and establish linkages with their own experience. Later, review and discussion enable reflection on content, implications and themes. Understanding movie context and perspective helps tenor those reflections and allows for critical evaluation of the movie and ideas presented in class. Movies demonstrate themes and ideas with intensity and engagement, and provide ongoing opportunities for reflection, evaluation, and assessment.

#138. Student-Centered Teaching with Undergraduate Faculty Teaching Partnerships

Xinlei Wang
University of Illinois at Urbana-Champaign

In response to the increasing concern over the sustainability of conventional fossil fuels and their impact on the environment, a new course, ABE436/TSM 436- Renewable Energy Systems, was developed and offered to engineering and non-engineering students across campus at the University of Illinois at Urbana-Champaign in spring 2007. In this class, problem-based learning was used throughout the lectures. The student-centered teaching with undergraduate faculty teaching partnerships (UFTP) was implemented to enhance student learning. The objective was to facilitate and enhance the learning of the students in this new course on renewable energy, using an UFTP learner-centered approach. This course has many opportunities to involve undergraduate teaching assistants and two were hired to assist with class preparation. Their responsibilities included: (a) preparing class problems for problem-based learning; (b) preparing assignments; (c) leading the discussions; (d) mentoring project teams; and (e) conducting peer-tutoring sessions. The effectiveness of using the innovative UFTP approach in the renewable energy class has been evaluated in different ways and proven

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very successful. The mean score for the final exam was 85%. The overall quality of this course as rated by the students was 4.7 out of 5. The success of this course can also be measured by the significant increase from the 2007 enrolment to the 2008 class. There are 40 students from 14 departments registered for the spring 2008 course compared to the 13 students in the course's first semester in spring 2007.

#139. Reacting to Student Academic Problems as a Means of Retention

D. Pavelock, D. Ullrich, B. Strauss, and W. Fleming

Sam Houston State University

Sam Houston State University established the Student Advising and Mentoring Center (SAM Center) in 2001. The center has three mentoring programs designed for students who need academic guidance and assistance. While these programs are reactionary due to academic problems the student has encountered, they have proven successful in retaining students. The First Alert program entails faculty identifying students having difficulty in a class due to low grades or excessive absences. The program had a 68.3% success rate in the fall 2007 semester, meaning students either passed the class, dropped it, or resigned. The Monitored Academic Progress (MAP) Program is designed for students who have been suspended. As a condition of re-entering the University, students are referred by the corresponding college's dean. Students are given specific instructions on courses, course loads, and other course-related specifics. Then, these students are referred to the SAM Center for special tracking during the semester. The fall 2007 semester saw 40% of the students come off probation, and 67% improved their GPAs. Finally, the Study Skills Program provides students an opportunity to improve their academic success through a pre- and post-standardized assessment of their study skills, as well as six, one-hour seminars focusing on topics such as time management, note-taking, and stress management. The average GPA of participating students prior to early-semester seminars was 1.75; the average GPA rose to 2.49 after completing the program. Academic success clearly aids in student retention and these programs have been vital to the successful retention efforts at the University.

#143. Enhancing Mutually Beneficial Professional Collaboration between Post Secondary and Secondary Agricultural Educators

Donna Moore
Virginia Tech

As a part of a larger case study of one state's agricultural education professional development

planning practices, secondary teachers in the planning group emphasized the value of designing programs that encourage secondary and post secondary educators to develop collaborative professional education relationships. In this study the detailed description of the planning process required multiple means of data collection including meeting observations, interviews, document analysis, and a focus group. During the study the teacher-planners identified a new program model for the annual inservice program that they created in partnership with state staff and university faculty. This new model encouraged secondary and post secondary educators to collaborate, improve peer-to-peer communication, provide peer support for new professionals, and encouraged the involvement of multiple agricultural education organizations. The teacher planners were specifically focused on promoting collaboration with the university faculty involved in studies at the agriculture research station. In addition to their efforts to partner with the experiment station faculty the group addressed strategies to involve faculty from the agriculture community colleges. The inclusion of educators as leaders in professional development program planning is a significant shift from university or state agency driven professional education programs. As educators in this study have shared, they need to be given the opportunity to contribute to the development of relevant learning experiences that can translate into changes in professional practice. Furthermore, efforts to improve communication and collaboration between individuals may improve the retention of education professionals.

#144. Designing a New Student Orientation Course for Freshmen Retention

Ronald Hanson

University of Nebraska-Lincoln

In order to help new freshmen students majoring in the Department of Agricultural Economics make a more successful transition from high school to college, a New Student Career Orientation course was designed and implemented. The goal for this course is to enhance student success in their academic programs and to increase the level of student retention among these new students. Through this course students gain a better understanding of the diverse role of University life and are encouraged to establish both personal and academic goals as they begin the start of their college studies. Upon completion of this 12 week course, freshmen students will have accomplished eight measurable learning objectives leading to a higher rate of student retention for the Department and College. These students learn time management skills as well as study skills for academic success. Freshmen students are able to begin identifying potential internship and career opportunities in their academic program of study, as

well as international study opportunities. This orientation course further promotes student academic success by fostering the development of student leadership skills through campus involvement and student activities. During the past six years, this course has generated a 96 percent retention rate for freshmen students in the Department of Agricultural Economics. Students earn one semester hour credit for completing the course.

#145. Direct-Measure Outcome-Based Assessment

R. Swartz

University of Nebraska-Lincoln

The Department of Agricultural Economics is participating in a University of Nebraska on-line assessment project, Program Excellence through Assessment Research and Learning (PEARL). It is being piloted by two colleges at the University—the College of Agricultural Sciences and Natural Resources and the College of Education and Human Sciences—before it is implemented University-wide. Assessment plans and follow-up results are entered on-line each year and are reviewed by cross-college faculty teams. In addition to this feedback, the PEARL system enables participants to learn from “best practices” of others. In line with the PEARL project, the Department defined a mission statement and three learning outcomes. Learning outcomes were based on knowledge, skills, and characteristics that faculty, employers and alumni identified as being important for program graduates. The PEARL system involves key elements such as identifying opportunities for outcome-based learning and the use of direct evidence/measures of student learning. The Department's focus in its first round of PEARL assessment was senior capstone courses. Using grade and pre-test/post-test data for assessment of two senior capstone courses, Department findings indicated a need for additional direct measures of student learning. It is currently involved in a process to extend direct-measure assessment through: (1) identifying opportunities for students to acquire knowledge and skills needed to demonstrate they have achieved learning outcomes; (2) determining student products (papers, presentations, pre- and post-tests, etc.) that can be used for assessment; (3) developing a scoring guide/rubric for assessment use and improvement of Department programs; and (4) establishing permanent monitoring and assessment mechanisms so assessment programs can be adjusted as need indicates.

#146. Service-Learning: Investigating Non-Point Source Water Pollution from Urban and Rural Areas

R. Stephenson and J. Leiker

Fort Hays State University

S. Minson

Kansas State University

Students learn and comprehend subject matter in a variety of ways, but most scholars would agree that the majority of students truly retain information if it involves “hands-on” experience. Students from a capstone course (Agronomic Crop Production) helped collect, interpret and present water data from an ongoing water quality research project. The project allowed students to: 1) study the effects of tillage practices and crop residue as it relates to soil erosion, runoff and sedimentation; 2) study the effects of runoff from urban areas as it relates to water pollution; 3) understand how to measure water quality and the importance of water quality; and 4) interpret water quality measurements. The capstone course is designed to tie together many things students learn from various courses and provides them the big picture of how it all fits together. Incorporating a service-learning project helps them understand production principles, but it also makes them more aware of problems from rural areas. Results of the study indicate that there are potential water quality problems from farming operations, but that there may be even more critical issues coming from urban areas. Students presented the findings at a Home & Garden Show and discussed the results with the public. They investigated various ways they could help educate the public about water quality and show them that not just farmers affect their drinking water. Students agreed that service-learning was an effective activity and provided a more enthusiastic learning environment.

#147. Engaging Agriculture and Non-Agriculture Students in an Interdisciplinary Curriculum for Sustainable Agriculture

Mark Williams, Mike Mullen, and Larry Grabau

University of Kentucky

Victoria Bhavsar

Cal State Pomona

An increasing number of land grant and non-land grant schools are implementing undergraduate degree programs in alternative, sustainable and/or organic agriculture. Many of these programs originate as areas of specialized study or concentration within more traditional agricultural science majors. Maintaining the essential elements of an agricultural

science major while finding room for the additional requirements of an interdisciplinary discipline such as sustainable agriculture can be challenging. In 2007, the University of Kentucky (UK) introduced a Sustainable Agriculture Curriculum with options for students to major or minor. The curriculum's requirements are closely modeled on the definition of sustainability used by the USDA's Sustainable Agriculture Research and Education (SARE) program. SARE defines sustainability as a management system applicable to any farm in which the producer optimizes environmental, economic, and social resources for the operation's long-term success. While maintaining a strong foundation in the coursework characteristic of agricultural science majors, UK's Sustainable Agriculture Curriculum is truly interdisciplinary, using courses in biology, economics, and sociology that synergistically complement each other and provide an integrated and holistic approach to sustainable agriculture. A specific focus of the curriculum is to provide students with experiential learning opportunities. This is accomplished by requiring all students to complete an apprenticeship on UK's organically-managed Community Supported Agriculture (CSA) farm, which was established for this curriculum. Additionally, the curriculum has been designed to engage non-agricultural students through the minor option, and non-agriculture faculty through cross-disciplinary collaboration. These efforts are aimed at broadening and strengthening the societal support base for sustainable agriculture.

#149. Critical Thinking Dispositions of Students in a College of Agricultural and Environmental Sciences Seminar

Dennis Duncan, John Ricketts, and Jean Bertrand
University of Georgia

AESC 1010 introduces students to agriculture and tries to employ critical thinking therein. In light of the diversity (major) of students and researchers' suppositions that critical thinking is discipline-specific (Ennis, 1990; Ricketts & Rudd, 2004), this study sought to (1) describe the population of CAES students; (2) describe the critical thinking dispositions of students in AESC 1010; and (3) compare critical thinking dispositions of CAES majors and non-majors. Critical thinking was assessed using the following constructs: Engagement (seeking opportunities to use reasoning, foreseeing circumstances that require reasoning and assurance in reasoning ability), Cognitive Maturity (being aware of the intricacies of problems, being open-minded, and being cognizant of biases), and Innovativeness (being intellectually inquisitive and having a need to know and understand the truth). A population of ($n = 48$) students completed the UF-EMI Critical Thinking

Disposition (CTD) Inventory for this descriptive study. Twenty-one (43.8%) non-majors and 23 (47.9%) CAES majors were represented. Students scored $m = 44.22$ ($SD = 4.76$), $m = 30.45$ ($SD = 3.37$), $m = 27.11$ ($SD = 3.33$), and $m = 102.19$ ($SD = 9.63$) respectively on the Engagement, Cognitive Maturity, and Innovativeness Scores, indicating students have a weak disposition for critical thinking (Bisdorf-Rhoades, Irani, Lundy, Ricketts, Telg, 2005). In comparing CAES majors to non-majors, there was no practical difference between the two groups. The CAES seminar should seek new and different methods for fostering critical thinking in and about agriculture among all of its students.

#150. Students Bring Biochemistry into Focus through Student Created Videos

Cheryl Bailey
University of Nebraska-Lincoln

Student-created videos constitute active learning opportunities which integrate high level cognitive skills and address motivation and affective skill levels as measured by Bloom's Taxonomy. In this three week project, student teams selected a biochemical concept, then planned, filmed, and edited videos in which they explained a biochemical concept using everyday objects. Graduate teaching assistants and instructors worked with the groups as needed to refine video concepts and biochemistry concepts. Students reported high motivation for this project, the building of rapport with other students in the class, and a deeper understanding of the biochemistry of their topic and other group's topics.

Students in this biochemistry laboratory course already use Remembering, Understanding, Applying and Analyzing, in addition to some Evaluating when they perform, analyze, and report laboratory experiments. Incorporating this video project adds the Revised Bloom's Taxonomy cognitive level of Creating, which is described as Designing, Constructing, Planning, Production, Inventing, Devising, Making, as well as the Affective Levels of Teamwork and Motivation. Future improvements of this pedagogy include development of a grading rubric to be used for both peer, formative, and summative evaluation of the project. Finished videos and student assessment of this project demonstrate active cognitive learning and affective skills as evidenced by Bloom's taxonomy. This project helps students relate biochemistry to everyday life and retain their interest and understanding of biochemistry concepts.

#151. Using Peer Teaching to Improve Learning

Dann Husmann

University of Nebraska-Lincoln

With the rapid development of technology into classrooms, instructors in higher education face a variety of challenges to ensure students learn in the least restrictive environment. As instructors integrate new technology into their curriculum, they must consider what content is being offered, and through what system is it being delivered to their students. The University of Nebraska-Lincoln offers a Peer Teaching Project for faculty to investigate specific learning challenges and problems facing students in their courses. In this instance, the presenter selected a course taught in an undergraduate program that involved a sophisticated program in Excel® dealing with financial management. This Peer Teaching Project sought to investigate if students enrolled in the course possessed the requisite knowledge of the basic functions in Excel® and if they had a basic understanding of financial management. During the past two years the course was taught, the assignment involving the use of the Excel® program along with the financial management problem rated very low on the course evaluation from students. The instructor deemed it necessary to determine if students enrolled in the class the next time it was offered possessed the necessary skill and ability to navigate this specific assignment in the course. Data were collected during the course, which brought light to what was needed by students before enrolling in the course. As a result, a pre-test was developed to determine if students possessed the requisite knowledge and skills to learning in the least restrictive environment of the course before enrolling in it.

#154. Using a Departmental Resume Book as a Service Learning Model

Kevin Bacon and Mark Hoge

Western Illinois University

Larae Watkins

University of Central Missouri

As a service learning project, the Agribusiness Club at Western Illinois University publishes an annual resume book in print and electronic form for students seeking internship or full time employment. This book has become a major tool for the department in their work to assist students' with internship and job placements. This service project joins classroom, club and community to support student learning in a real world setting. Other campus groups, including the athletic department, have expressed interest in adopting this process as a model. Neither students submitting resumes or companies receiving a copy are charged. Club members sell ads to cover the cost

of publication and distribution. The club publishes the resume book in time for distribution to companies attending the department's annual career fair. Additional copies are mailed to companies that have hired graduates within the past five years. Feedback from industry has been very positive with several companies requesting additional copies for other divisions. Career fair attendees like being able to review resumes on prospective interns/employees during the career fair, especially during any slow periods. Many companies have commented on the usefulness of having all the resumes in one package and many prefer having the resumes in printed form. Students have also commented that by the time they visit with a company, the person they meet with has already reviewed their resume. Club members gain experience from organizing, soliciting funding and producing the Resume Book; and the department gains from the addition of a student-produced placement tool.

#155. Delivering Plant Biosecurity Training through Experiential Learning Activities

Daniel Collins, Yadong Qi, Andra Johnson,

Kamran Abdollahi, Zhu Ning, and Fulbert

Namwamba

Southern University

There is a need to provide more post baccalaureate training and experiential learning in plant health management at U.S. land grant universities to counter the bio-terrorism threat to our nation's agriculture. In order to make intelligent agricultural biosecurity decisions and effectively protect this nation's agricultural resources, we also need a highly coordinated approach at multiple levels ranging from individual laboratories to state and federal agencies. Students training in plant biosecurity in a multidisciplinary setting with state and federal agencies involved in plant disease surveillance, rapid identification and detection of plant pathogens and management of plant pathogens that pose a threat to our crops would aid in enhancing our nation's agricultural security. To address this need the urban forestry program at Southern University, Baton Rouge, LA is incorporating plant biosecurity training into the urban forestry graduate curriculum. The program has partnered with various federal and state agencies and university collaborators to provide students with experiential learning opportunities in plant biosecurity. These training activities have facilitated student empowerment and engagement through interdisciplinary learning activities in plant biosecurity by means of class forums, symposiums, field trips, laboratory exercises, oral presentations, and research internships.

#157. Selection of Team Members for Group Activities

Thomas Broyles, Laura Stacklin, and Edward McCann
Virginia Tech

The implementation of group activities has become a widely used pedagogical method. The benefits of group activities have included: generation of multiple ideas or concepts, ability to generate solutions to ill-defined problems, and skill development including teamwork and leadership. The literature clearly explains that selection of team members is a crucial step in the use of group activities for the teaching and learning process. Recommendations from the literature also states teams should be heterogeneous based on characteristics such as: age, gender, and intellectual capability.

The purpose of this session was to explore another concept to forming teams that uses problem solving styles as the primary selection tool. Problems solving styles address ways people generate ideas and prepare for implementation. The theoretical framework for problem solving styles addresses learning styles, cognitive style, and psychological type. Problem solving styles do not change but by informing team members of their preference, the learner can learn to adapt and work with other styles.

#159. A Curriculum for University Agricultural Communication Programs: A Synthesis of Research

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Tarleton State University

Arguably, student retention in colleges of agriculture, regardless of discipline, are largely contingent on each respective program's curriculum being current, relevant, and beneficial for student career placement upon graduation. As such, departments seeking to retain students must periodically focus inwardly on curriculum effectiveness based on student satisfaction and perceived career preparation. The primary objective of this study was to identify and organize previous studies regarding university agricultural communication curriculum. To further propel scholarly study in the agricultural communication realm, a second objective was to delineate research deficiencies. Articles utilized in this study were obtained through a library database search from seven sources and were published between 1972 and 2007. Studies pertaining to agricultural communication degree program features, student characteristics, and curriculum elements were evaluated. Research identifying current student, alumni, and agricultural communication professional perceptions were also synthesized. The majority of previous research utilized researcher developed questionnaires or surveys and was descriptive in design. In addition, many studies were more than 10 years old, or were regionally

confined; therefore, an updated national evaluation of agricultural communication programs and program trends is necessary so that student curricular needs can most appropriately be met. The documented demand for a master's degree program in agricultural communication also implies a variety of research prospects; thereby, allowing for potential niche transition of students retained from undergraduate to graduate agricultural communication programs.

#160. Geographic Information Systems (GIS) and Remote Sensing (RS): Undergraduate Academic Curriculum and Pre-college Training Program

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Virginia State University

L. Hayden
Elizabeth City State University

G. Ozbay
Delaware State University

J. Everitt and R. Fletcher
USDA-ARS, Weslaco, TX

In this collaborative USDA Capacity Building Teaching Grant, Virginia State University (VSU) and its partner institutions, Delaware State University (DSU) and Elizabeth City State University (ECSU) developed the geospatial instruction which integrates within the science curriculum. At VSU, the Grant activities resulted in developing and offering of two courses, "Principles of Geographic Information Systems-AGRI 280" and the "Introduction to Remote Sensing-AGRI 290". Students who come to Virginia State University can choose to major in a variety of disciplines, including Agricultural, Aquatic, and Environmental Sciences, Natural and Social Sciences, Engineering, and Liberal Arts. The course on Geographic Information System (AGRI 280) is designed to introduce students to the fundamental concepts and applications of GIS. The course on Remote Sensing (RS) includes image analysis and integrating the data in ArcGIS.

The faculty members from ECSU, DSU, and Bethune-Cookman University (BCU) participated in faculty development workshops for gaining experiences for teaching of the courses on GIS and RS. These workshops were coordinated by the Principal Investigator (Dr. Sriharan) and Co-Principal Investigators (Dr. Hayden and Dr. Ozbay) of the USDA project. The USDA collaborators, Dr. James Everitt and Dr. Reginald Fletcher, provided exposure to field activities and hands-on experiences with GIS and RS technologies. VSU has also coordinated outreach activities on creating awareness of GIS among the pre-college audiences in Southside

Virginia. This presentation focuses on the successful results on the development and implementation of the GIS and RS courses at VSU and its partner HBCUs, and summer programs for high school teachers and students

#161. Collaborative Efforts for Writing Case Studies and Videoconferencing: Human Nutrition, Food Safety, and Environmental Health

S .Sriharan
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USDA-ARS, Weslaco, TX
D. Sutphin
Virginia Tech

V. Thomas
Florida A & M University

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This collaborative USDA Capacity Building Teaching Grant prepares students to gain global perspectives on global issues by their participation in class and web-based discussion. The students are engaged in writing reflections on assigned readings and model case studies developed through the international program, "Global Seminar" located at Virginia College of Osteopathic Medicine (VCOM), Virginia Tech. By using the concepts of Global Seminar, the faculty is mentored in global teaching, creating and accessing the virtual libraries, and integrating case studies as electives in agricultural and food sciences. Each institution has developed the course, "Global Seminar" for the undergraduates. At VSU, the Global Seminar is offered to lower-level undergraduates (AGRI 295) and upper-level graduates (AGRI 401). The students prepare their power point presentations for exchanging their viewpoints via discussion board, chat, and videoconference at Virginia State University (VSU) and its partner institutions, Florida a & M University (FAMU), University of Puerto Rico at Mayaguez (UPRM), and Elizabeth City State University (ECSU). The outcomes of the project activities were disseminated at professional meetings in Washington, D.C., University of Guadalajara, and Florida A& M University. The faculty members associated with Global Seminar are developing case studies on Food Safety, Food Microbiology, Nutrition and Prevention of Obesity, through faculty development workshops at partner institutions in Virginia, North Carolina,

Florida, and Mexico. The successful results of the Global Seminar project activities were presented by the project director and co-directors at the Annual Planning Meetings in Washington, D.C. (2005) and Mexico (2007).

#162. Impact of Academic Achievement on the Understanding of Basic Molecular Biology Concepts

Tim Buttles and Bonnie Walters
University of Wisconsin-River Falls

Previous SOTL research has evaluated the use of different teaching techniques on the understanding of basic molecular biology concepts. These studies left questions regarding the level of understanding the students had upon entry into the course. The course being used for this research is an agricultural biochemistry course typically taken by second semester sophomores and juniors. Over 90% of the students in the course have had a college biology course with about 75% having also taken a genetics course. Students agreeing to participate completed a five-question pretest and consented to having grades checked for previous courses. Students who had completed biology and genetics made up the majority of the students at 53% (group 1). The second group of students (19%) had completed biology and genetics while concurrently taking either animal breeding or plant breeding. The group of students who had taken biology and were concurrently taking genetics was 11% of the course. The average pretest score for groups one, two and three were 30%, 41% and 22.5% respectively. The number of students for each group as well as the pretest scores for the groups were comparable to what has previously been reported. The only deviation is that group two had an average pretest score of 41%, 11% higher than previous studies. The correlation between grade in biology and pretest score was 0.354 while the correlation for genetics and pretest score was 0.325. These correlations indicate that performance in the previous courses has only a slight relationship with pretest scores.

#171. Partnerships between 1862 and 1890 Institution for Developing Model Case Studies on Food Safety and Human Nutrition

S. Sriharan

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R. Fletcher and James Everitt

USDA-ARS, Weslaco, TX

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Florida A & M University

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Elizabeth City State University

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A USDA grant created a partnership between colleges of agriculture and life science at six 1864 and 1890 institutions and a medical school to develop a new program for seamless curriculum and instruction based on a constructivist approach for student centered learning. This unique faculty team in agriculture and medicine is a model for future partnerships to develop case studies that integrate agriculture, food, nutrition and health. Cases and primary readings, supplemental references, PowerPoints, teaching notes and other reference materials are stored in a shared virtual library for students and faculty at participating institutions. A Harvard decision case format is applied in a new way to agriculture and human health real world research-based problems. Learner-centered scientific inquiry uses a six-dimensional matrix as an epistemology for critical thinking to derive solutions to complex multidimensional problems. New innovative instructional delivery and dissemination of this curriculum includes a virtual electronic classroom for asynchronous and live interactive videoconference in student-lead problem solving seminars. Teaching protocols structure a rotation of presentations by each university and open discussion during a 90-minute video conference. Three student scholars from each institution present solutions in seven minute sequences while faculty serve as mentors and facilitators, changing the instructor dominated paradigm. A wide range of applications include a range of content areas, multidisciplinary studies at upper undergraduate and graduate levels, and US and international collaboration. Outcomes include a strong theoretical basis for teaching, deployment of latest technology, development of critical thinking and problem solving skills, efficient curriculum development and a faculty network for creative curriculum and instructional development.

#172. A Science-based Training Program to Enhance Capacity in Food and Agricultural Biosecurity

**S. Nahashon, F. Tegegne, and A. Aziz
Tennessee State University**

The objective of this work was to provide traditional students, teachers, and agricultural professionals with comprehensive introduction to major issues in agro-terrorism, appropriate measures to prevent their occurrence and to ensure the safety and security of our food supply. Additional objectives were to provide hands-on training in counter agro-terrorism skill to college students and to introduce agro-terrorism response skills to middle and high school science and agricultural teachers. Three workshops were conducted by project directors and invited speakers to address the roles of government, industry, farmers, industry, consumers and others in protecting plants, animals, and food from deliberate bioterrorist attacks. More than 30 faculty and high school teachers have participated in the workshops. Overall, more than 100 agricultural personnel have undergone training. Fifteen students have successfully trained in rapid detection methods for food-borne and plant pathogens and environmental (soil and water) contaminants that could deliberately be introduced into the food systems environment. Surveys were also conducted concurrently with the training workshops to assess consumers' level of concern on agricultural biosecurity and their willingness to pay additional to cover the cost of food protection. The level of concern about agricultural biosecurity by 87% of respondents ranged from high to very high. Similarly, the vast majority (90%) of the respondents indicated their willingness to pay more for food protection, which was proportional to their level of education and income. The participation and results from this project suggest that consumers are cognizant of the need to enhance efforts of protecting our food supply.

#176. To Establish a Model Capstone Internship in Food Safety

**Verian D. Thomas, Neil James, Mitwe Musingo and Ray Mobley
Florida A & M University**

M. Edlow

Virginia State University

During the first year of the three-year project funded by USDA/CSREES, a capstone internship was established with a class of nine upper level students majoring in food science. This program reflects a partnership among the Food Science program at Florida A&M University, the Florida Department of Agriculture and Consumer Services, the Florida Department of Health, and processing plants near Tallahassee, and its goal is to teach students how industry and the regulatory state agencies work to

solve real world food safety issues. Students registered in a three-credit-hour course, during the 2007 spring semester, and each week they conducted field trips to various state laboratories and industrial sites. During this period, the students also received lectures on common pathogens and chemical residues in foods from the state experts, participated in “hands-on” activities involving common food pathogens in the Foods Laboratories, conducted inspections of supermarkets, institutional establishments, processing plants, and a highway interdiction site, and learnt how food and waterborne diseases are investigated in the state. The students were continually assessed, using knowledge-based pre- and post-tests, weekly reports, presentations, surveys and a final paper. A comparison of the results from the pre- and post-tests showed clear increases in student knowledge as a result of the program: eight out of nine students correctly answered only three or fewer of 15 items on the pre-test, whereas eight out of nine students correctly answered 13 or more of 15 items on the post-test. The overall accuracy rates on the pre- and post-tests were about 13% and 92%, respectively, and this improvement was statistically significant ($p = 0.006$). In addition, eight out of nine students surveyed agreed that the knowledge and experiences gained from these real world applications greatly enhanced their training.

#186. Service-Learning in Home Horticulture

J. Gleichsner

Fort Hays State University

Service-Learning is a method of teaching and learning that integrates community service activities into academic curricula and expands the learning of students from the classroom to the community. The goal of service learning is to benefit both the community and the student. Service learning gives hands-on experience to students and encourages students toward lifelong civic involvement. Thus, students learn to become active members and leaders of their community while changing society's view of education and service. Service-learning projects were incorporated into Home Horticulture, a survey course covering a range of topics from houseplants to landscaping. Over the years projects have included: 1) beautification of a city park; 2) installation of a grass planting in a city park; 3) landscaping of a humane society; and 4) building of flower boxes and raised beds for pre-school children and the elderly. Funding for the projects came from national grants, local service clubs and university funds. Events were covered both by the local newspaper and the local television station. A ceremony was held during the event to thank students and financial contributors. Students wrote about their service-learning experience and then shared their thoughts with others in the class. Overall, students expressed their increased understanding of the course material and their feeling of contributing to the community.

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#192. Enhancing K-12 Experiential Learning in Agri-Science Related Disciplines through Laboratory-based Training and Leadership Development

Victor Brown

Tuskegee University

Michelle McKee

SECME, Inc, Atlanta, GA

Tuskegee University has partnered with school systems to alleviate the low representation of minorities in the AgriScience-related workforce by addressing: i) limited hands-on laboratory-based exposure; ii) limited infrastructure and resources for underserved minority schools; and iii) the need for leadership training. The initiative re-enforced the curricula in AgriScience-related disciplines at the pre-collegiate level. AgriTREK, the two-week residential program, created an awareness of the educational and career opportunities that are available in AgriScience through hands-on research. Students participating in AgriTREK conducted intensive hands-on research under the guidance of faculty and staff where they are exposed them to the latest developments in science and technology through research projects based on their career interests. Additionally, scholars are introduced to seminars and workshops on leadership development and personal enrichment; the ultimate goal is to provide a holistic approach in training and mentoring these scholars as future leaders having positive impact in their schools and communities. AgriTREK is making a concerted effort to train underserved minorities by re-enforcing science and technology curricula at the pre-collegiate level thus promoting an effective pipeline of students who elect to attend four-year colleges. At Tuskegee University there are two former AgriTREK scholars enrolled currently and for the 2008/9 academic year 28 former AgriTREK scholars from Selma Early College High applied for admission.

#194. How Community Colleges and Federal Grants were Used to Create a New Multidisciplinary Agriculture Program

Eric Houk and Mark Bender

California State University

This poster discusses how a new multidisciplinary agriculture program was developed at California State University, Stanislaus. Although the university is located in the heart of California's Great Central Valley, one of the most agriculturally rich areas of the country, it had not been able to offer a program in agriculture until recently. State budget cuts and the resistance from some of the existing agriculture programs in the state made the development of this program even more difficult. However, by using

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existing community college resources and securing external funding we have been able to create a unique program that better serves the students in our region. Our classification as a Hispanic-Serving Institution (HSI) has also provided us with special opportunities to compete for USDA grants that were specifically designed for this classification. Funding from the

USDA's HSI education grants program has allowed us to strengthen our program and attract/retain some of the best students in our region. As a result of these efforts, enrollment in our program has been increasing significantly and we are helping increase the number of people that are qualified to participate in our country's agricultural workforce.

***“Advancing the scholarship of
teaching and learning”***

